

10/561829

SEQUENCE LISTING

<110> Gencia Corporation  
Khan, Shaharyar

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<120> Modified Vectors for Organelle Transfection

<130> 60199.0001USWO

<140> New Filing

<141> December 21, 2005

<150> PCT/US2004/020454

<151> June 25, 2004

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<151> June 25, 2003

<160> 585

<170> PatentIn version 3.2

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Gly Glu Val Ser Cys Leu Val Ala Gly Thr Lys Cys Asp Lys Val Val  
 50 55 60

Gln Asp Leu Cys Lys Val Ala Gly Val Ala Lys Val Leu Val Ala Gln  
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 His Asp Ala Tyr Lys Gly Leu Leu Pro Glu Glu Leu Thr Pro Leu Ile  
 85 90 95  
 Leu Glu Thr Gln Lys Gln Phe Ser Tyr Thr His Ile Cys Ala Gly Ala  
 100 105 110  
 Ser Ala Phe Gly Lys Asn Leu Leu Pro Arg Val Ala Ala Lys Leu Asn  
 115 120 125  
 Val Ala Pro Val Ser Asp Ile Ile Glu Ile Lys Ser Pro Asp Thr Phe  
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 Val Arg Thr Ile Tyr Ala Gly Asn Ala Leu Cys Thr Val Lys Cys Asp  
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 Glu Lys Val Lys Val Phe Ser Val Arg Gly Thr Ser Phe Glu Ala Ala  
 165 170 175  
 Ala Thr Ser Gly Gly Ser Ala Ser Ser Glu Lys Ala Pro Ser Ser Ser  
 180 185 190  
 Ser Val Gly Ile Ser Glu Trp Leu Asp Gln Lys Leu Thr Lys Ser Asp  
 195 200 205  
 Pro Pro Glu Leu Thr Gly Ala Lys Val Val Val Ser Gly Gly Arg Gly  
 210 215 220  
 Leu Lys Ser Gly Glu Asn Phe Lys Leu Leu Tyr Asp Leu Ala Asp Gln  
 225 230 235 240  
 Leu His Ala Ala Val Gly Ala Ser Arg Ala Ala Val Asp Ala Gly Phe  
 245 250 255  
 Val Pro Asn Asp Met Gln Val Gly Gln Thr Gly Lys Ile Val Ala Pro  
 260 265 270  
 Glu Leu Tyr Ile Ala Val Gly Ile Ser Gly Ala Ile Gln His Leu Ala  
 275 280 285  
 Gly Met Lys Asp Ser Lys Thr Ile Val Ala Ile Asn Lys Asp Pro Glu  
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 Ala Pro Ile Phe Gln Val Ala Asp Tyr Gly Ile Val Ala Asp Leu Phe  
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Lys Val Val Pro Glu Met Thr Glu Ile Leu Lys Lys Lys  
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<400> 8

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Ile Arg Val Lys Pro Asp Lys Ser Gly Val Val Thr Asp Gly Val Lys  
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His Ser Met Asn Pro Phe Cys Glu Ile Ala Val Glu Glu Ala Val Arg  
 35 40 45

Leu Lys Glu Lys Lys Leu Val Lys Glu Ile Ile Ala Val Ser Cys Gly  
 50 55 60

Pro Ser Gln Cys Gln Glu Thr Ile Arg Thr Ala Leu Ala Met Gly Ala  
 65 70 75 80

Asp Arg Gly Ile His Val Glu Ile Pro Gly Ala Gln Ala Glu Ser Leu  
 85 90 95

Gly Pro Leu Gln Val Ala Arg Val Leu Ala Lys Leu Ala Glu Lys Glu  
 100 105 110

Lys Val Asp Leu Leu Phe Leu Gly Lys Gln Ala Ile Asp Asp Asp Cys  
 115 120 125

Asn Gln Thr Gly Gln Met Thr Ala Gly Leu Leu Asp Trp Pro Gln Gly  
 130 135 140

Thr Phe Ala Ser Gln Val Thr Leu Glu Gly Asp Lys Val Lys Val Glu  
 145 150 155 160

Arg Glu Ile Asp Gly Gly Leu Glu Thr Leu Arg Leu Lys Leu Pro Ala  
 165 170 175

Val Val Thr Ala Asp Leu Arg Leu Asn Glu Pro Arg Tyr Ala Thr Leu  
 180 185 190

Pro Asn Ile Met Lys Ala Lys Lys Lys Lys Ile Glu Val Val Lys Ala  
 195 200 205

Gly Asp Leu Gly Val Asp Leu Thr Ser Lys Val Ser Val Ile Ser Val  
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Glu Glu Pro Pro Gln Arg Ser Ala Gly Val Lys Val Glu Thr Thr Glu  
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<213> Homo sapiens

<400> 9

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Phe Asn Arg Ile Ser His Gly Leu Gln Gly Leu Ser Ala Val Pro Leu  
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Arg Thr Tyr Ala Asp Gln Pro Ile Asp Ala Asp Val Thr Val Ile Gly  
35 40 45

Ser Gly Pro Gly Gly Tyr Val Ala Ala Ile Lys Ala Ala Gln Leu Gly  
50 55 60

Phe Lys Thr Val Cys Ile Glu Lys Asn Glu Thr Leu Gly Gly Thr Cys  
65 70 75 80

Leu Asn Val Gly Cys Ile Pro Ser Lys Ala Leu Leu Asn Asn Ser His  
85 90 95

Tyr Tyr His Met Ala His Gly Thr Asp Phe Ala Ser Arg Gly Ile Glu  
100 105 110

Met Ser Glu Val Arg Leu Asn Leu Asp Lys Met Met Glu Gln Lys Ser  
115 120 125

Thr Ala Val Lys Ala Leu Thr Gly Gly Ile Ala His Leu Phe Lys Gln  
130 135 140

Asn Lys Val Val His Val Asn Gly Tyr Gly Lys Ile Thr Gly Lys Asn  
145 150 155 160

Gln Val Thr Ala Thr Lys Ala Asp Gly Gly Thr Gln Val Ile Asp Thr  
165 170 175

Lys Asn Ile Leu Ile Ala Thr Gly Ser Glu Val Thr Pro Phe Pro Gly  
Page 14

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435

440

445

Arg Val Leu Gly Ala His Ile Leu Gly Pro Gly Ala Gly Glu Met Val  
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Asn Glu Ala Ala Leu Ala Leu Glu Tyr Gly Ala Ser Cys Glu Asp Ile  
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Ala Arg Val Cys His Ala His Pro Thr Leu Ser Glu Ala Phe Arg Glu  
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<213> Mus musculus

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Gly Ser Gly Lys Gly Thr Val Ser Ser Arg Ile Thr Lys His Phe Glu  
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Leu Lys His Leu Ser Ser Gly Asp Leu Leu Arg Gln Asn Met Leu Gln  
35 40 45

Gly Thr Glu Ile Gly Val Leu Ala Lys Thr Phe Ile Asp Gln Gly Lys  
50 55 60

Leu Ile Pro Asp Asp Val Met Thr Arg Leu Ala Leu His Glu Leu Lys  
65 70 75 80

Thr Leu Thr Gln Cys Ser Trp Leu Leu Asp Gly Phe Pro Arg Thr Leu  
85 90 95

Pro Gln Ala Glu Ala Leu Asp Lys Val Tyr Gln Ile Asp Thr Val Ile  
100 105 110

Asn Leu Asn Val Pro Phe Glu Val Ile Lys Gln Arg Leu Thr Ala Arg  
115 120 125

Trp Ile His Pro Ala Ser Gly Arg Val Tyr Asn Ile Glu Phe Asn Pro  
130 135 140

Pro Lys Thr Val Gly Ile Asp Asp Leu Thr Gly Glu Pro Leu Ile Gln  
145 150 155 160

Arg Glu Asp Asp Lys Pro Glu Thr Val Ile Lys Arg Leu Lys Ala Tyr  
165 170 175

Glu Ala Gln Thr Glu Pro Val Leu Gln Tyr Tyr Gln Lys Lys Gly Val  
180 185 190

Leu Glu Thr Phe Ser Gly Thr Glu Thr Asn Lys Ile Trp Pro His Val  
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Tyr Ser Phe Leu Gln Thr Lys Val Pro Glu Thr Thr Gln Lys Ala Ser  
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Val Thr Pro  
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<400> 11

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Leu Lys Asp Val Leu Ser Asn Leu Ile Pro Lys Glu Gln Ala Arg Ile  
35 40 45

Lys Thr Phe Lys Gln Gln His Gly Lys Thr Val Val Gly Gln Ile Thr  
50 55 60

Val Asp Met Met Tyr Gly Gly Met Arg Gly Met Lys Gly Leu Val Tyr  
65 70 75 80

Glu Thr Ser Val Leu Asp Pro Asp Glu Gly Ile Arg Phe Arg Gly Tyr  
85 90 95

Ser Ile Pro Glu Cys Gln Lys Met Leu Pro Lys Ala Lys Gly Gly Glu  
100 105 110

Glu Pro Leu Pro Glu Gly Leu Phe Trp Leu Leu Val Thr Gly Gln Met  
115 120 125

Pro Thr Glu Glu Gln Val Ser Trp Leu Ser Arg Glu Trp Ala Lys Arg  
130 135 140

Ala Ala Leu Pro Ser His Val Val Thr Met Leu Asp Asn Phe Pro Thr  
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 Asn Leu His Pro Met Ser Gln Leu Ser Ala Ala Ile Thr Ala Leu Asn  
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 Ser Glu Ser Asn Phe Ala Arg Ala Tyr Ala Glu Gly Met Asn Arg Ala  
 180 185 190  
 Lys Tyr Trp Glu Leu Ile Tyr Glu Asp Cys Met Asp Leu Ile Ala Lys  
 195 200 205  
 Leu Pro Cys Val Ala Ala Lys Ile Tyr Arg Asn Leu Tyr Arg Glu Gly  
 210 215 220  
 Ser Ser Ile Gly Ala Ile Asp Ser Arg Leu Asp Trp Ser His Asn Phe  
 225 230 235 240  
 Thr Asn Met Leu Gly Tyr Thr Asp Pro Gln Phe Thr Glu Leu Met Arg  
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 Leu Tyr Leu Thr Ile His Ser Asp His Glu Gly Gly Asn Val Ser Ala  
 260 265 270  
 His Thr Ser His Leu Val Gly Ser Ala Leu Ser Asp Pro Tyr Leu Ser  
 275 280 285  
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 Lys Asp Val Ser Asp Glu Lys Leu Arg Asp Tyr Ile Trp Asn Thr Leu  
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 Asn Ser Gly Arg Val Val Pro Gly Tyr Gly His Ala Val Leu Arg Lys  
 340 345 350  
 Thr Asp Pro Arg Tyr Ser Cys Gln Arg Glu Phe Ala Leu Lys His Leu  
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 Pro Lys Asp Pro Met Phe Lys Leu Val Ala Gln Leu Tyr Lys Ile Val  
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 Pro Asn Ile Leu Leu Glu Gln Gly Lys Ala Lys Asn Pro Trp Pro Asn  
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Val Asp Ala His Ser Gly Val Leu Leu Gln Tyr Tyr Gly Met Thr Glu  
405 410 415

Met Asn Tyr Tyr Thr Val Leu Phe Gly Val Ser Arg Ala Leu Gly Val  
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Pro Lys Ser Met Ser Thr Asp Gly Leu Met Lys Phe Val Asp Ser Lys  
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<213> Homo sapiens

<400> 12

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Gly Phe Gly Phe Thr Asn Val Thr Ala His Gln Lys Trp Lys Phe Ser  
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Arg Pro Gly Ile Arg Leu Leu Ser Val Lys Ala Gln Thr Ala His Ile  
35 40 45

Val Leu Glu Asp Gly Thr Lys Met Lys Gly Tyr Ser Phe Gly His Pro  
50 55 60

Ser Ser Val Ala Gly Glu Val Val Phe Asn Thr Gly Leu Gly Gly Tyr  
65 70 75 80

Pro Glu Ala Ile Thr Asp Pro Ala Tyr Lys Gly Gln Ile Leu Thr Met  
85 90 95

Ala Asn Pro Ile Ile Gly Asn Gly Gly Ala Pro Asp Thr Thr Ala Leu  
100 105 110

Asp Glu Leu Gly Leu Ser Lys Tyr Leu Glu Ser Asn Gly Ile Lys Val  
115 120 125

Ser Gly Leu Leu Val Leu Asp Tyr Ser Lys Asp Tyr Asn His Trp Leu  
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Ala Thr Lys Ser Leu Gly Gln Trp Leu Gln Glu Glu Lys Val Pro Ala  
145 150 155 160

Ile Tyr Gly Val Asp Thr Arg Met Leu Thr Lys Ile Ile Arg Asp Lys  
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 Gly Thr Met Leu Gly Lys Ile Glu Phe Glu Gly Gln Pro Val Asp Phe  
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 Val Asp Pro Asn Lys Gln Asn Leu Ile Ala Glu Val Ser Thr Lys Asp  
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 Val Lys Val Tyr Gly Lys Gly Asn Pro Thr Lys Val Val Ala Val Asp  
 210 215 220  
 Cys Gly Ile Lys Asn Asn Val Ile Arg Leu Leu Val Lys Arg Gly Ala  
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 Glu Val His Leu Val Pro Trp Asn His Asp Phe Thr Lys Met Glu Tyr  
 245 250 255  
 Asp Gly Ile Leu Ile Ala Gly Gly Pro Gly Asn Pro Ala Leu Ala Glu  
 260 265 270  
 Pro Leu Ile Gln Asn Val Arg Lys Ile Leu Glu Ser Asp Arg Lys Glu  
 275 280 285  
 Pro Leu Phe Gly Ile Ser Thr Gly Asn Leu Ile Thr Gly Leu Ala Ala  
 290 295 300  
 Gly Ala Lys Thr Tyr Lys Met Ser Met Ala Asn Arg Gly Gln Asn Gln  
 305 310 315 320  
 Pro Val Leu Asn Ile Thr Asn Lys Gln Ala Phe Ile Thr Ala Gln Asn  
 325 330 335  
 His Gly Tyr Ala Leu Asp Asn Thr Leu Pro Ala Gly Trp Lys Pro Leu  
 340 345 350  
 Phe Val Asn Val Asn Asp Gln Thr Asn Glu Gly Ile Met His Glu Ser  
 355 360 365  
 Lys Pro Phe Phe Ala Val Gln Phe His Pro Glu Val Thr Pro Gly Pro  
 370 375 380  
 Ile Asp Thr Glu Tyr Leu Phe Asp Ser Phe Phe Ser Leu Ile Lys Lys  
 385 390 395 400  
 Gly Lys Ala Thr Thr Ile Thr Ser Val Leu Pro Lys Pro Ala Leu Val  
 405 410 415



Ala Ser Arg Val Glu Val Ser Lys Val Leu Ile Leu Gly Ser Gly Gly  
 420 425 430  
 Leu Ser Ile Gly Gln Ala Gly Glu Phe Asp Tyr Ser Gly Ser Gln Ala  
 435 440 445  
 Val Lys Ala Met Lys Glu Glu Asn Val Lys Thr Val Leu Met Asn Pro  
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 Asn Ile Ala Ser Val Gln Thr Asn Glu Val Gly Leu Lys Gln Ala Asp  
 465 470 475 480  
 Thr Val Tyr Phe Leu Pro Ile Thr Pro Gln Phe Val Thr Glu Val Ile  
 485 490 495  
 Lys Ala Glu Gln Pro Asp Gly Leu Ile Leu Gly Met Gly Gly Gln Thr  
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 Ala Leu Asn Cys Gly Val Glu Leu Phe Lys Arg Gly Val Leu Lys Glu  
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 Tyr Gly Val Lys Val Leu Gly Thr Ser Val Glu Ser Ile Met Ala Thr  
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 Glu Asp Arg Gln Leu Phe Ser Asp Lys Leu Asn Glu Ile Asn Glu Lys  
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 Ile Ala Pro Ser Phe Ala Val Glu Ser Ile Glu Asp Ala Leu Lys Ala  
 565 570 575  
 Ala Asp Thr Ile Gly Tyr Pro Val Met Ile Arg Ser Ala Tyr Ala Leu  
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 Gly Gly Leu Gly Ser Gly Ile Cys Pro Asn Arg Glu Thr Leu Met Asp  
 595 600 605  
 Leu Ser Thr Lys Ala Phe Ala Met Thr Asn Gln Ile Leu Val Glu Lys  
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 625 630 635 640  
 Asp Asp Asn Cys Val Thr Val Cys Asn Met Glu Asn Val Asp Ala Met  
 645 650 655  
 Gly Val His Thr Gly Asp Ser Val Val Val Ala Pro Ala Gln Thr Leu  
 660 665 670

Ser Asn Ala Glu Phe Gln Met Leu Arg Arg Thr Ser Ile Asn Val Val  
 675 680 685  
 Arg His Leu Gly Ile Val Gly Glu Cys Asn Ile Gln Phe Ala Leu His  
 690 695 700  
 Pro Thr Ser Met Glu Tyr Cys Ile Ile Glu Val Asn Ala Arg Leu Ser  
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 Arg Ser Ser Ala Leu Ala Ser Lys Ala Thr Gly Tyr Pro Leu Ala Phe  
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 Ile Ala Ala Lys Ile Ala Leu Gly Ile Pro Leu Pro Glu Ile Lys Asn  
 740 745 750  
 Val Val Ser Gly Lys Thr Ser Ala Cys Phe Glu Pro Ser Leu Asp Tyr  
 755 760 765  
 Met Val Thr Lys Ile Pro Arg Trp Asp Leu Asp Arg Phe His Gly Thr  
 770 775 780  
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 785 790 795 800  
 Ile Gly Arg Thr Phe Glu Glu Ser Phe Gln Lys Ala Leu Arg Met Cys  
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 His Pro Ser Ile Glu Gly Phe Thr Pro Arg Leu Pro Met Asn Lys Glu  
 820 825 830  
 Trp Pro Ser Asn Leu Asp Leu Arg Lys Glu Leu Ser Glu Pro Ser Ser  
 835 840 845  
 Thr Arg Ile Tyr Ala Ile Ala Lys Ala Ile Asp Asp Asn Met Ser Leu  
 850 855 860  
 Asp Glu Ile Glu Lys Leu Thr Tyr Ile Asp Lys Trp Phe Leu Tyr Lys  
 865 870 875 880  
 Met Arg Asp Ile Leu Asn Met Glu Lys Thr Leu Lys Gly Leu Asn Ser  
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 Glu Ser Met Thr Glu Glu Thr Leu Lys Arg Ala Lys Glu Ile Gly Phe  
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 Ser Asp Lys Gln Ile Ser Lys Cys Leu Gly Leu Thr Glu Ala Gln Thr  
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Arg Glu Leu Arg Leu Lys Lys Asn Ile His Pro Trp Val Lys Gln Ile  
 930 935 940

Asp Thr Leu Ala Ala Glu Tyr Pro Ser Val Thr Asn Tyr Leu Tyr Val  
 945 950 955 960

Thr Tyr Asn Gly Gln Glu His Asp Val Asn Phe Asp Asp His Gly Met  
 965 970 975

Met Val Leu Gly Cys Gly Pro Tyr His Ile Gly Ser Ser Val Glu Phe  
 980 985 990

Asp Trp Cys Ala Val Ser Ser Ile Arg Thr Leu Arg Gln Leu Gly Lys  
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Lys Thr Val Val Val Asn Cys Asn Pro Glu Thr Val Ser Thr Asp  
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Phe Asp Glu Cys Asp Lys Leu Tyr Phe Glu Glu Leu Ser Leu Glu  
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Arg Ile Leu Asp Ile Tyr His Gln Glu Ala Cys Gly Gly Cys Ile  
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Ile Ser Val Gly Gly Gln Ile Pro Asn Asn Leu Ala Val Pro Leu  
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Tyr Lys Asn Gly Val Lys Ile Met Gly Thr Ser Pro Leu Gln Ile  
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Asp Arg Ala Glu Asp Arg Ser Ile Phe Ser Ala Val Leu Asp Glu  
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Leu Lys Val Ala Gln Ala Pro Trp Lys Ala Val Asn Thr Leu Asn  
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Glu Ala Leu Glu Phe Ala Lys Ser Val Asp Tyr Pro Cys Leu Leu  
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Arg Pro Ser Tyr Val Leu Ser Gly Ser Ala Met Asn Val Val Phe  
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Ser Glu Asp Glu Met Lys Lys Phe Leu Glu Glu Ala Thr Arg Val  
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Ser Gln Glu His Pro Val Val Leu Thr Lys Phe Val Glu Gly Ala  
 1160 1165 1170

Arg Glu Val Glu Met Asp Ala Val Gly Lys Asp Gly Arg Val Ile  
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 Pro Thr Leu Asp His Pro Ile Ile Pro Ala Asp Tyr Val Ala Ile  
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 Ser Phe Arg Pro Arg Phe Leu Gly Val Ala Glu Gln Leu His Asn  
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 Glu Gly Phe Lys Leu Phe Ala Thr Glu Ala Thr Ser Asp Trp Leu  
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Glu Gly Gln Asn Pro Ser Leu Ser Ser Ile Arg Lys Leu Ile Arg  
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Asp Gly Ser Ile Asp Leu Val Ile Asn Leu Pro Asn Asn Asn Thr  
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Lys Phe Val His Asp Asn Tyr Val Ile Arg Arg Thr Ala Val Asp  
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Ser Gly Ile Pro Leu Leu Thr Asn Phe Gln Val Thr Lys Leu Phe  
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Ile Ser Gln Glu Leu Gln Val Leu Arg Ile Ile Lys Asn Phe Glu Arg  
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Leu Asn Ser Asp Phe Asp Arg Tyr Leu Leu Leu Met Asp Leu Gln Asp  
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Arg Asn Glu Lys Leu Phe Tyr Ser Val Leu Met Ser Asp Val Glu Lys  
85 90 95

Phe Met Pro Ile Val Tyr Thr Pro Thr Val Gly Leu Ala Cys Gln Gln  
100 105 110

Tyr Ser Leu Ala Phe Arg Lys Pro Arg Gly Leu Phe Ile Ser Ile His  
115 120 125

Asp Lys Gly His Ile Ala Ser Val Leu Asn Ala Trp Pro Glu Asp Val  
Page 25

130

135

140

Val Lys Ala Ile Val Val Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly  
145 150 155 160

Asp Leu Gly Cys Asn Gly Met Gly Ile Pro Val Gly Lys Leu Ala Leu  
165 170 175

Tyr Thr Ala Cys Gly Gly Val Asn Pro Gln Gln Cys Leu Pro Ile Thr  
180 185 190

Leu Asp Val Gly Thr Glu Asn Glu Glu Leu Leu Lys Asp Pro Leu Tyr  
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Ile Gly Leu Arg His Arg Arg Val Arg Gly Pro Glu Tyr Asp Ala Phe  
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Leu Asp Glu Phe Met Glu Ala Ala Ser Ser Lys Tyr Gly Met Asn Cys  
225 230 235 240

Leu Ile Gln Phe Glu Asp Phe Ala Asn Arg Asn Ala Phe Arg Leu Leu  
245 250 255

Asn Lys Tyr Arg Asn Lys Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly  
260 265 270

Thr Ala Ser Val Ala Val Ala Gly Leu Leu Ala Ala Leu Arg Ile Thr  
275 280 285

Lys Asn Lys Leu Ser Asp Gln Thr Val Leu Phe Gln Gly Ala Gly Glu  
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Ala Ala Leu Gly Ile Ala His Leu Val Val Met Ala Met Glu Lys Glu  
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Gly Leu Ser Lys Glu Asn Ala Arg Lys Lys Ile Trp Leu Val Asp Ser  
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Lys Gly Leu Ile Val Lys Gly Arg Ala Ser Leu Thr Glu Glu Lys Glu  
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Val Phe Ala His Glu His Glu Glu Met Lys Asn Leu Glu Ala Ile Val  
355 360 365

Gln Lys Ile Lys Pro Thr Ala Leu Ile Gly Val Ala Ala Ile Gly Gly  
370 375 380

Ala Phe Thr Glu Gln Ile Leu Lys Asp Met Ala Ala Phe Asn Glu Arg  
Page 26



Ser Val Glu Tyr Glu Pro Lys Glu Lys Thr Phe Asp Lys Ile Leu Ile  
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Ala Asn Arg Gly Glu Ile Ala Cys Arg Val Ile Lys Thr Cys Lys Lys  
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Met Gly Ile Lys Thr Val Ala Ile His Ser Asp Val Asp Ala Ser Ser  
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Val His Val Lys Met Ala Asp Glu Ala Val Cys Val Gly Pro Ala Pro  
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Thr Ser Lys Ser Tyr Leu Asn Met Asp Ala Ile Met Glu Ala Ile Lys  
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Lys Thr Arg Ala Gln Ala Val His Pro Gly Tyr Gly Phe Leu Ser Glu  
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Asn Lys Glu Phe Ala Lys Arg Leu Ala Ala Glu Asp Val Thr Phe Ile  
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Gly Pro Asp Thr His Ala Ile Gln Ala Met Gly Asp Lys Ile Glu Ser  
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Lys Leu Leu Ala Lys Arg Ala Lys Val Asn Thr Ile Pro Gly Phe Asp  
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Gly Val Val Lys Asp Ala Asp Glu Ala Val Arg Ile Ala Arg Glu Ile  
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Gly Tyr Pro Val Met Ile Lys Ala Ser Ala Gly Gly Gly Gly Lys Gly  
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Met Arg Ile Ala Trp Asp Asp Glu Glu Thr Arg Asp Gly Phe Arg Phe  
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Ser Ser Gln Glu Ala Ala Ser Ser Phe Gly Asp Asp Arg Leu Leu Ile  
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Glu Lys Phe Ile Asp Asn Pro Arg His Ile Glu Ile Gln Val Leu Gly  
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Asp Lys His Gly Asn Ala Leu Trp Leu Asn Glu Arg Glu Cys Ser Ile  
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Gln Arg Arg Asn Gln Lys Val Val Glu Glu Ala Pro Ser Ile Phe Leu  
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Asp Pro Glu Thr Arg Gln Ala Met Gly Glu Gln Ala Val Ala Leu Ala  
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 Lys Ala Val Lys Tyr Ser Ser Ala Gly Thr Val Glu Phe Leu Val Asp  
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 Ser Gln Lys Asn Phe Tyr Phe Leu Glu Met Asn Thr Arg Leu Gln Val  
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 Glu His Pro Val Thr Glu Cys Ile Thr Gly Leu Asp Leu Val Gln Glu  
 355 360 365  
 Met Ile Leu Val Ala Lys Gly Tyr Pro Leu Arg His Lys Gln Glu Asp  
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 Ile Pro Ile Ser Gly Trp Ala Val Glu Cys Arg Val Tyr Ala Glu Asp  
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 Pro Tyr Lys Ser Phe Gly Leu Pro Ser Ile Gly Arg Leu Ser Gln Tyr  
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 Gln Glu Pro Ile His Leu Pro Gly Val Arg Val Asp Ser Gly Ile Gln  
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 Pro Gly Ser Asp Ile Ser Ile Tyr Tyr Asp Pro Met Ile Ser Lys Leu  
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 Val Thr Tyr Gly Ser Asp Arg Ala Glu Ala Leu Lys Arg Met Glu Asp  
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 Ala Lys Phe Leu Ser Asp Val Tyr Pro Asp Gly Phe Lys Gly His Thr  
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Val His Asp Glu Asp His Thr Val Val Ala Ser Asn Asn Gly Pro Ala  
565 570 575

Phe Thr Val Glu Val Asp Gly Ser Lys Leu Asn Val Thr Ser Thr Trp  
580 585 590

Asn Leu Ala Ser Pro Leu Leu Ser Val Asn Val Asp Gly Thr Gln Arg  
595 600 605

Thr Val Gln Cys Leu Ser Arg Glu Ala Gly Gly Asn Met Ser Ile Gln  
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Phe Leu Gly Thr Val Tyr Lys Val His Ile Leu Thr Lys Leu Ala Ala  
625 630 635 640

Glu Leu Asn Lys Phe Met Leu Glu Lys Val Pro Lys Asp Thr Ser Ser  
645 650 655

Thr Leu Cys Ser Pro Met Pro Gly Val Val Val Ala Val Ser Val Lys  
660 665 670

Pro Gly Asp Met Val Ala Glu Gly Gln Glu Ile Cys Val Ile Glu Ala  
675 680 685

Met Lys Met Gln Asn Ser Met Thr Ala Gly Lys Met Gly Lys Val Lys  
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Val Glu Leu Glu

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Ile Ala Cys Arg Val Ile Arg Thr Cys Lys Lys Met Gly Ile Lys Thr  
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 Val Ala Ile His Ser Asp Val Asp Ala Ser Ser Val His Val Lys Met  
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 Ala Asp Glu Ala Val Cys Val Gly Pro Ala Pro Thr Ser Lys Ser Tyr  
 85 90 95  
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 Ala Val His Pro Gly Tyr Gly Phe Leu Ser Glu Asn Lys Glu Phe Ala  
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 Arg Cys Leu Ala Ala Glu Asp Val Val Phe Ile Gly Pro Asp Thr His  
 130 135 140  
 Ala Ile Gln Ala Met Gly Asp Lys Ile Glu Ser Lys Leu Leu Ala Lys  
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 Lys Ala Glu Val Asn Thr Ile Pro Gly Phe Asp Gly Val Val Lys Asp  
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 Ala Glu Glu Ala Val Arg Ile Ala Arg Glu Ile Gly Tyr Pro Val Met  
 180 185 190  
 Ile Lys Ala Ser Ala Gly Gly Gly Gly Lys Gly Met Arg Ile Ala Trp  
 195 200 205  
 Asp Asp Glu Glu Thr Arg Asp Gly Phe Arg Leu Ser Ser Gln Glu Ala  
 210 215 220  
 Ala Ser Ser Phe Gly Asp Asp Arg Leu Leu Ile Glu Lys Phe Ile Asp  
 225 230 235 240  
 Asn Pro Arg His Ile Glu Ile Gln Val Leu Gly Asp Lys His Gly Asn  
 245 250 255  
 Ala Leu Trp Leu Asn Glu Arg Glu Cys Ser Ile Gln Arg Arg Asn Gln  
 260 265 270  
 Lys Val Val Glu Glu Ala Pro Ser Ile Phe Leu Asp Ala Glu Thr Arg  
 275 280 285  
 Arg Ala Met Gly Glu Gln Ala Val Ala Leu Ala Arg Ala Val Lys Tyr  
 290 295 300

Ser 305 Ser Ala Gly Thr Val 310 Glu Phe Leu Val Asp 315 Ser Lys Lys Asn Phe 320  
 Tyr Phe Leu Glu Met 325 Asn Thr Arg Leu Gln 330 Val Glu His Pro Val 335 Thr  
 Glu Cys Ile Thr 340 Gly Leu Asp Leu Val 345 Gln Glu Met Ile Arg 350 Val Ala  
 Lys Gly Tyr 355 Pro Leu Arg His Lys 360 Gln Ala Asp Ile Arg 365 Ile Asn Gly  
 Trp Ala Val Glu Cys Arg Val 375 Tyr Ala Glu Asp Pro 380 Tyr Lys Ser Phe  
 Gly 385 Leu Pro Ser Ile Gly 390 Arg Leu Ser Gln Tyr 395 Gln Glu Pro Leu His 400  
 Leu Pro Gly Val Arg 405 Val Asp Ser Gly Ile 410 Gln Pro Gly Ser Asp 415 Ile  
 Ser Ile Tyr Tyr 420 Asp Pro Met Ile Ser 425 Lys Leu Ile Thr Tyr 430 Gly Ser  
 Asp Arg Thr 435 Glu Ala Leu Lys Arg 440 Met Ala Asp Ala Leu 445 Asp Asn Tyr  
 Val Ile Arg Gly Val Thr 455 His Asn Ile Ala Leu 460 Leu Arg Glu Val Ile  
 Ile Asn Ser Arg Phe Val 470 Lys Gly Asp Ile Ser 475 Thr Lys Phe Leu Ser 480  
 Asp Val Tyr Pro Asp 485 Gly Phe Lys Gly His 490 Met Leu Thr Lys Ser Glu 495  
 Lys Asn Gln Leu 500 Leu Ala Ile Ala Ser 505 Ser Leu Phe Val Ala 510 Phe Gln  
 Leu Arg Ala 515 Gln His Phe Gln Glu 520 Asn Ser Arg Met Pro 525 Val Ile Lys  
 Pro Asp 530 Ile Ala Asn Trp Glu 535 Leu Ser Val Lys Leu 540 His Asp Lys Val  
 His 545 Thr Val Val Ala Ser 550 Asn Asn Gly Ser Val 555 Phe Ser Val Glu Val 560

Asp Gly Ser Lys Leu Asn Val Thr Ser Thr Trp Asn Leu Ala Ser Pro  
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Leu Leu Ser Val Ser Val Asp Gly Thr Gln Arg Thr Val Gln Cys Leu  
580 585 590

Ser Arg Glu Ala Gly Gly Asn Met Ser Ile Gln Phe Leu Gly Thr Val  
595 600 605

Tyr Lys Val Asn Ile Leu Thr Arg Leu Ala Ala Glu Leu Asn Lys Phe  
610 615 620

Met Leu Glu Lys Val Thr Glu Asp Thr Ser Ser Val Leu Arg Ser Pro  
625 630 635 640

Met Pro Gly Val Val Val Ala Val Ser Val Lys Pro Gly Asp Ala Val  
645 650 655

Ala Glu Gly Gln Glu Ile Cys Val Ile Glu Ala Met Lys Met Gln Asn  
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Lys Glu Cys Pro Gly Ile Glu Pro Val Cys Val Asp Leu Gly Asp Trp  
50 55 60

Asp Ala Thr Glu Lys Ala Leu Gly Gly Ile Gly Pro Val Asp Leu Leu  
65 70 75 80

Val Asn Asn Ala Ala Leu Val Ile Met Gln Pro Phe Leu Glu Val Thr  
85 90 95

Lys Glu Ala Phe Asp Arg Ser Phe Ser Val Asn Leu Arg Ser Val Phe  
100 105 110

Gln Val Ser Gln Met Val Ala Arg Asp Met Ile Asn Arg Gly Val Pro  
115 120 125

Gly Ser Ile Val Asn Val Ser Ser Met Val Ala His Val Thr Phe Pro  
130 135 140

Asn Leu Ile Thr Tyr Ser Ser Thr Lys Gly Ala Met Thr Met Leu Thr  
145 150 155 160

Lys Ala Met Ala Met Glu Leu Gly Pro His Lys Ile Arg Val Asn Ser  
165 170 175

Val Asn Pro Thr Val Val Leu Thr Asp Met Gly Lys Lys Val Ser Ala  
180 185 190

Asp Pro Glu Phe Ala Arg Lys Leu Lys Glu Arg His Pro Leu Arg Lys  
195 200 205

Phe Ala Glu Val Glu Asp Val Val Asn Ser Ile Leu Phe Leu Leu Ser  
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Tyr Leu Ala Ser

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Leu Thr Val Ala Ser Gln Tyr Ser Pro Tyr Ala Gln Thr Ser Thr Val

50

55

60

Gly Met Trp Ile Asp Ala Gly Ser Arg Ala Glu Thr Asp Glu Thr Asn  
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Gly Thr Ala His Phe Leu Glu His Leu Ala Phe Lys Gly Thr Thr Lys  
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Arg Thr Gln Gln Gln Leu Glu Leu Glu Ile Glu Asn Met Gly Ala His  
100 105 110

Leu Asn Ala Tyr Thr Ser Arg Glu Asn Thr Val Tyr Phe Ala Lys Ala  
115 120 125

Leu Asn Glu Asp Val Pro Lys Cys Val Asp Ile Leu Gln Asp Ile Leu  
130 135 140

Gln Asn Ser Lys Leu Glu Glu Ser Ala Ile Glu Arg Glu Arg Asp Val  
145 150 155 160

Ile Leu Arg Glu Ser Glu Glu Val Glu Lys Gln Leu Glu Glu Val Val  
165 170 175

Phe Asp His Leu His Ala Thr Ala Tyr Gln His Gln Pro Leu Gly Arg  
180 185 190

Thr Ile Leu Gly Pro Arg Glu Asn Ile Arg Asp Ile Thr Arg Thr Glu  
195 200 205

Leu Val Asn Tyr Ile Lys Asn Asn Tyr Thr Ala Asp Arg Met Val Leu  
210 215 220

Val Gly Ala Gly Gly Val Pro His Glu Gln Leu Val Glu Met Ala Asp  
225 230 235 240

Lys Tyr Phe Ser Lys Leu Pro Ala Thr Ala Pro Val Ser Ser Ala Ser  
245 250 255

Ile Leu Ser Lys Lys Lys Pro Asp Phe Ile Gly Ser Asp Ile Arg Ile  
260 265 270

Arg Asp Asp Thr Ile Pro Thr Ala Asn Ile Ala Ile Ala Val Glu Gly  
275 280 285

Val Ser Trp Ser Asp Asp Asp Tyr Phe Thr Gly Leu Val Thr Gln Ala  
290 295 300

Ile Val Gly Asn Tyr Asp Lys Ala Leu Gly Asn Ala Pro His Gln Gly  
Page 35





Leu Phe Pro Ala Ala Gln Val Lys Lys Met Gly Gly Leu Gly Leu Leu  
65 70 75 80

Ala Met Asp Val Pro Glu Glu Leu Gly Gly Ala Gly Leu Asp Tyr Leu  
85 90 95

Ala Tyr Ala Ile Ala Met Glu Glu Ile Ser Arg Gly Cys Ala Ser Thr  
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Gly Val Ile Met Ser Val Asn Asn Ser Leu Tyr Leu Gly Pro Ile Leu  
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Lys Phe Gly Ser Lys Glu Gln Lys Gln Ala Trp Val Thr Pro Phe Thr  
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Ser Gly Asp Lys Ile Gly Cys Phe Ala Leu Ser Glu Pro Gly Asn Gly  
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Ser Asp Ala Gly Ala Ala Ser Thr Thr Ala Arg Ala Glu Gly Asp Ser  
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Trp Val Leu Asn Gly Thr Lys Ala Trp Ile Thr Asn Ala Trp Glu Ala  
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Ser Ala Ala Val Val Phe Ala Ser Thr Asp Arg Ala Leu Gln Asn Lys  
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Gly Ile Ser Ala Phe Leu Val Pro Met Pro Thr Pro Gly Leu Thr Leu  
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Pro Gly Met Gly Phe Lys Ile Ala Met Gln Thr Leu Asp Met Gly Arg  
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Ile Gly Ile Ala Ser Gln Ala Leu Gly Ile Ala Gln Thr Ala Leu Asp  
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Cys Ala Val Asn Tyr Ala Glu Asn Arg Met Ala Phe Gly Ala Pro Leu  
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Thr Lys Leu Gln Val Ile Gln Phe Lys Leu Ala Asp Met Ala Leu Ala  
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Leu Glu Ser Ala Arg Leu Leu Thr Trp Arg Ala Ala Met Leu Lys Asp  
325 330 335

Asn Lys Lys Pro Phe Ile Lys Glu Ala Ala Met Ala Lys Leu Ala Ala  
340 345 350

Ser Glu Ala Ala Thr Ala Ile Ser His Gln Ala Ile Gln Ile Leu Gly  
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Gly Met Gly Tyr Val Thr Glu Met Pro Ala Glu Arg His Tyr Arg Asp  
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Gly Glu Val Ser Cys Leu Val Ala Gly Thr Lys Cys Asp Lys Val Ala  
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Gln Asp Leu Cys Lys Val Ala Gly Ile Ala Lys Val Leu Val Ala Gln  
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His Asp Val Tyr Lys Gly Leu Leu Pro Glu Glu Leu Thr Pro Leu Ile  
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Leu Ala Thr Gln Lys Gln Phe Asn Tyr Thr His Ile Cys Ala Gly Ala  
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Ser Ala Phe Gly Lys Asn Leu Leu Pro Arg Val Ala Ala Lys Leu Glu  
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Val Ala Pro Ile Ser Asp Ile Ile Ala Ile Lys Ser Pro Asp Thr Phe  
130 135 140

Val Arg Thr Ile Tyr Ala Gly Asn Ala Leu Cys Thr Val Lys Cys Asp  
145 150 155 160

Glu Lys Val Lys Val Phe Ser Val Arg Gly Thr Ser Phe Asp Ala Ala  
165 170 175

Ala Thr Ser Gly Gly Ser Ala Ser Ser Glu Lys Ala Ser Ser Thr Ser  
180 185 190

Pro Val Glu Ile Ser Glu Trp Leu Asp Gln Lys Leu Thr Lys Ser Asp  
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Arg Pro Glu Leu Thr Gly Ala Lys Val Val Val Ser Gly Gly Arg Gly  
210 215 220

Leu Lys Ser Gly Glu Asn Phe Lys Leu Leu Tyr Asp Leu Ala Asp Gln  
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Leu His Ala Ala Val Gly Ala Ser Arg Ala Ala Val Asp Ala Gly Phe  
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Val Pro Asn Asp Met Gln Val Gly Gln Thr Gly Lys Ile Val Ala Pro  
260 265 270

Glu Leu Tyr Ile Ala Val Gly Ile Ser Gly Ala Ile Gln His Leu Ala  
275 280 285

Gly Met Lys Asp Ser Lys Thr Ile Val Ala Ile Asn Lys Asp Pro Glu  
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 His Pro His His Phe Leu Lys Thr Thr Ala Ala Leu Arg Gly Gln Val  
 50 55 60  
 Val Gln Phe Lys Leu Ser Asp Ile Gly Glu Gly Ile Arg Glu Val Thr  
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 Val Lys Glu Trp Tyr Val Lys Glu Gly Asp Thr Val Ser Gln Phe Asp  
 85 90 95  
 Ser Ile Cys Glu Val Gln Ser Asp Lys Ala Ser Val Thr Ile Thr Ser  
 100 105 110  
 Arg Tyr Asp Gly Val Ile Lys Lys Leu Tyr Tyr Asn Leu Asp Asp Ile  
 115 120 125  
 Ala Tyr Val Gly Lys Pro Leu Val Asp Ile Glu Thr Glu Ala Leu Lys  
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 Asp Ser Glu Glu Asp Val Val Glu Thr Pro Ala Val Ser His Asp Glu  
 145 150 155 160  
 His Thr His Gln Glu Ile Lys Gly Arg Lys Thr Leu Ala Thr Pro Ala  
 165 170 175  
 Val Arg Arg Leu Ala Met Glu Asn Asn Ile Lys Leu Ser Glu Val Val  
 180 185 190  
 Gly Ser Gly Lys Asp Gly Arg Ile Leu Lys Glu Asp Ile Leu Asn Tyr  
 195 200 205  
 Leu Glu Lys Gln Thr Gly Ala Ile Leu Pro Pro Ser Pro Lys Val Glu  
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 Ile Met Pro Pro Pro Pro Lys Pro Lys Asp Met Thr Val Pro Ile Leu  
 225 230 235 240  
 Val Ser Lys Pro Pro Val Phe Thr Gly Lys Asp Lys Thr Glu Pro Ile  
 245 250 255  
 Lys Gly Phe Gln Lys Ala Met Val Lys Thr Met Ser Ala Ala Leu Lys  
 260 265 270

Ile Pro His Phe Gly Tyr Cys Asp Glu Ile Asp Leu Thr Glu Leu Val  
275 280 285

Lys Leu Arg Glu Glu Leu Lys Pro Ile Ala Phe Ala Arg Gly Ile Lys  
290 295 300

Leu Ser Phe Met Pro Phe Phe Leu Lys Ala Ala Ser Leu Gly Leu Leu  
305 310 315 320

Pro Phe Pro Ile Leu Asn Ala Ser Val Asp Glu Asn Cys Gln Asn Ile  
325 330 335

Thr Tyr Lys Ala Ser His Asn Ile Gly Ile Ala Met Asp Thr Glu Gln  
340 345 350

Gly Val Ile Val Pro Asn Val Lys Asn Val Gln Ile Cys Ser Ile Phe  
355 360 365

Asp Ile Ala Thr Glu Leu Asn Arg Leu Gln Lys Leu Gly Ser Val Gly  
370 375 380

Gln Leu Ser Thr Thr Asp Leu Thr Gly Gly Thr Phe Thr Leu Ser Asn  
385 390 395 400

Ile Gly Ser Ile Gly Gly Thr Phe Ala Lys Pro Val Ile Met Pro Pro  
405 410 415

Glu Val Ala Ile Gly Ala Leu Gly Ser Ile Lys Ala Ile Pro Arg Phe  
420 425 430

Asn Gln Lys Gly Glu Val Tyr Lys Ala Gln Ile Met Asn Val Ser Trp  
435 440 445

Ser Ala Asp His Arg Val Ile Asp Gly Ala Thr Met Ser Arg Phe Ser  
450 455 460

Asn Leu Trp Lys Ser Tyr Leu Glu Asn Pro Ala Phe Met Leu Leu Asp  
465 470 475 480

Leu Lys

<210> 21  
<211> 573  
<212> PRT  
<213> Homo sapiens

<400> 21

Met Leu Arg Leu Pro Thr Val Phe Arg Gln Met Arg Pro Val Ser Arg  
Page 41

1	5	10	15
Val	Leu	Ala	Pro
	20	His	Leu
Thr	Arg	Ala	Tyr
	25	Ala	Lys
Asp	Val	Lys	Phe
	30		
Gly	Ala	Asp	Ala
	35	Arg	Ala
Leu	Met	Leu	Gln
	40	Gly	Val
Asp	Leu	Leu	Ala
	45		
Asp	Ala	Val	Ala
	50	Val	Thr
Met	Gly	Pro	Lys
	55	Gly	Arg
Thr	Val	Ile	Ile
	60		
Glu	Gln	Ser	Trp
	65	Gly	Ser
Pro	Lys	Val	Thr
	70	Lys	Asp
Gly	Val	Thr	Val
	75		
Ala	Lys	Ser	Ile
	85	Asp	Leu
Lys	Asp	Lys	Tyr
	90	Lys	Asn
Ile	Gly	Ala	Lys
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Leu	Val	Gln	Asp
	100	Val	Ala
Asn	Asn	Thr	Asn
	105	Glu	Glu
Ala	Gly	Asp	Gly
	110		
Thr	Thr	Thr	Ala
	115	Thr	Val
Leu	Ala	Arg	Ser
	120	Ile	Ala
Lys	Glu	Gly	Phe
	125		
Glu	Lys	Ile	Ser
	130	Lys	Gly
Ala	Asn	Pro	Val
	135	Glu	Ile
Arg	Arg	Gly	Val
	140		
Met	Leu	Ala	Val
	145	Asp	Ala
Val	Ile	Ala	Glu
	150	Leu	Lys
Lys	Lys	Gln	Ser
	155		
Pro	Val	Thr	Thr
	165	Pro	Glu
Glu	Ile	Ala	Gln
	170	Val	Ala
Thr	Ile	Ser	Ala
	175		
Asn	Gly	Asp	Lys
	180	Glu	Ile
Gly	Asn	Ile	Ile
	185	Ser	Asp
Ala	Met	Lys	Lys
	190		
Val	Gly	Arg	Lys
	195	Gly	Val
Ile	Thr	Val	Lys
	200	Asp	Gly
Lys	Thr	Leu	Asn
	205		
Asp	Glu	Leu	Glu
	210	Ile	Ile
Glu	Gly	Met	Lys
	215	Phe	Asp
Arg	Gly	Tyr	Ile
	220		
Ser	Pro	Tyr	Phe
	225	Ile	Asn
Thr	Ser	Lys	Gly
	230	Gln	Lys
Cys	Glu	Phe	Gln
	235		
Asp	Ala	Tyr	Val
	245	Leu	Leu
Ser	Glu	Lys	Lys
	250	Ile	Ser
Ser	Ile	Gln	Ser
	255		
Ile	Val	Pro	Ala
		Leu	Glu
Ile	Ala	Asn	Ala
		His	Arg
Lys	Pro	Leu	Val

260

265

270

Ile Ile Ala Glu Asp Val Asp Gly Glu Ala Leu Ser Thr Leu Val Leu  
 275 280 285

Asn Arg Leu Lys Val Gly Leu Gln Val Val Ala Val Lys Ala Pro Gly  
 290 295 300

Phe Gly Asp Asn Arg Lys Asn Gln Leu Lys Asp Met Ala Ile Ala Thr  
 305 310 315 320

Gly Gly Ala Val Phe Gly Glu Glu Gly Leu Thr Leu Asn Leu Glu Asp  
 325 330 335

Val Gln Pro His Asp Leu Gly Lys Val Gly Glu Val Ile Val Thr Lys  
 340 345 350

Asp Asp Ala Met Leu Leu Lys Gly Lys Gly Asp Lys Ala Gln Ile Glu  
 355 360 365

Lys Arg Ile Gln Glu Ile Ile Glu Gln Leu Asp Val Thr Thr Ser Glu  
 370 375 380

Tyr Glu Lys Glu Lys Leu Asn Glu Arg Leu Ala Lys Leu Ser Asp Gly  
 385 390 395 400

Val Ala Val Leu Lys Val Gly Gly Thr Ser Asp Val Glu Val Asn Glu  
 405 410 415

Lys Lys Asp Arg Val Thr Asp Ala Leu Asn Ala Thr Arg Ala Ala Val  
 420 425 430

Glu Glu Gly Ile Val Leu Gly Gly Gly Cys Ala Leu Leu Arg Cys Ile  
 435 440 445

Pro Ala Leu Asp Ser Leu Thr Pro Ala Asn Glu Asp Gln Lys Ile Gly  
 450 455 460

Ile Glu Ile Ile Lys Arg Thr Leu Lys Ile Pro Ala Met Thr Ile Ala  
 465 470 475 480

Lys Asn Ala Gly Val Glu Gly Ser Leu Ile Val Glu Lys Ile Met Gln  
 485 490 495

Ser Ser Ser Glu Val Gly Tyr Asp Ala Met Ala Gly Asp Phe Val Asn  
 500 505 510

Met Val Glu Lys Gly Ile Ile Asp Pro Thr Lys Val Val Arg Thr Ala  
 Page 43

515

520

525

Leu Leu Asp Ala Ala Gly Val Ala Ser Leu Leu Thr Thr Ala Glu Val  
 530 535 540

Val Val Thr Glu Ile Pro Lys Glu Glu Lys Asp Pro Gly Met Gly Ala  
 545 550 555 560

Met Gly Gly Met Gly Gly Gly Met Gly Gly Gly Met Phe  
 565 570

&lt;210&gt; 22

&lt;211&gt; 577

&lt;212&gt; PRT

&lt;213&gt; Neurospora crassa

&lt;400&gt; 22

Met Leu Asn Arg Phe Arg Pro Ala Arg Leu Val Ala Gln Ser Ser Arg  
 1 5 10 15

Cys Leu Pro Leu Thr Arg Ala Arg Ala Gly Pro Leu Pro Val Asn Asn  
 20 25 30

Ala Arg Thr Leu Ala Thr Arg Ala Ala Ala Val Asn Thr Lys Glu Pro  
 35 40 45

Thr Glu Arg Asp Asn Ile Thr Thr Leu Ser Asn Gly Val Arg Val Ala  
 50 55 60

Ser Glu Asp Leu Pro Asp Ala Phe Ser Gly Val Gly Val Tyr Ile Asp  
 65 70 75 80

Ala Gly Ser Arg Tyr Glu Asn Asp Tyr Val Arg Gly Ala Ser His Ile  
 85 90 95

Met Asp Arg Leu Ala Phe Lys Ser Thr Ser Thr Arg Thr Ala Asp Glu  
 100 105 110

Met Leu Glu Thr Val Glu Lys Leu Gly Gly Asn Ile Gln Cys Ala Ser  
 115 120 125

Ser Arg Glu Ser Met Met Tyr Gln Ala Ala Thr Phe Asn Lys Ala Ile  
 130 135 140

Pro Thr Ala Val Glu Leu Met Ala Glu Thr Ile Arg Asp Pro Lys Leu  
 145 150 155 160

Thr Asp Glu Glu Leu Glu Gly Gln Ile Met Thr Ala Gln Tyr Glu Val  
 165 170 175



Asn Glu Ile Trp Ser Lys Ala Glu Leu Ile Leu Pro Glu Leu Val His  
180 185 190

Met Ala Ala Phe Lys Asp Asn Thr Leu Gly Asn Pro Leu Leu Cys Pro  
195 200 205

Lys Glu Arg Leu Asp Tyr Ile Asn Arg Asp Val Ile Gln Thr Tyr Arg  
210 215 220

Asp Ala Phe Tyr Arg Pro Glu Arg Leu Val Val Ala Phe Ala Gly Val  
225 230 235 240

Pro His Glu Arg Ala Val Lys Leu Ala Glu Lys Tyr Phe Gly Asp Met  
245 250 255

Lys Ala Ser Asp Ala Pro Gly Leu Ser Arg Thr Gly Ser Glu Thr Ser  
260 265 270

Val Asp Ser Leu Val Ser Glu Ser Ser Glu Ala Ser Ser Glu Ser Ser  
275 280 285

Ser Ser Ser Ser Asp Ser Ser Glu Ser Ser Gly Gly Leu Leu Ser Lys  
290 295 300

Leu Phe Ser Pro Lys Ala Lys Lys Ala Thr Pro Asn Pro Phe Leu Thr  
305 310 315 320

Arg Val Pro Ile Ser Thr Glu Asp Leu Thr Arg Pro Ala His Tyr Thr  
325 330 335

Gly Gly Phe Leu Thr Leu Pro Ser Gln Pro Pro Pro Leu Asn Pro Asn  
340 345 350

Leu Pro Thr Phe Thr His Ile Gln Leu Ala Phe Glu Gly Leu Ala Ile  
355 360 365

Ser Asp Asp Asp Ile Tyr Ala Leu Ala Thr Leu Gln Thr Leu Leu Gly  
370 375 380

Gly Gly Gly Ser Phe Ser Ala Gly Gly Pro Gly Lys Gly Met Tyr Ser  
385 390 395 400

Arg Leu Tyr Thr Asn Val Leu Asn Gln His Gly Trp Val Glu Ser Cys  
405 410 415

Val Ala Phe Asn His Ser Tyr Thr Asp Ser Gly Leu Phe Gly Ile Ala  
420 425 430

Ala Ser Cys Tyr Pro Gly Arg Thr Leu Pro Met Leu Gln Val Met Cys  
435 440 445

Arg Glu Leu His Ala Leu Thr Thr Asp His Gly Tyr Ser Ala Leu Gly  
450 455 460

Glu Leu Glu Val Ser Arg Ala Lys Asn Gln Leu Arg Ser Ser Leu Leu  
465 470 475 480

Met Asn Leu Glu Ser Arg Met Val Glu Leu Glu Asp Leu Gly Arg Gln  
485 490 495

Val Gln Val His Gly Arg Lys Ile Pro Val Arg Glu Met Thr Arg Arg  
500 505 510

Ile Asn Glu Leu Thr Val Lys Asp Leu Arg Arg Val Ala Lys Arg Val  
515 520 525

Val Gly Gly Met Ala Asn Asn Ala Gly Gln Gly Ser Gly Ala Pro Thr  
530 535 540

Val Val Leu Gln Glu Ala Thr Val Gln Gly Leu Lys Thr Thr Glu Leu  
545 550 555 560

Gly Trp Asp Gln Ile Gln Asp Thr Ile Ala Gln Trp Lys Leu Gly Arg  
565 570 575

Arg

<210> 23  
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<212> PRT  
<213> Homo sapiens

<400> 23

Met Ala Thr Ala Thr Arg Leu Leu Gly Trp Arg Val Ala Ser Trp Arg  
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Leu Arg Pro Pro Leu Ala Gly Phe Val Ser Gln Arg Ala His Ser Leu  
20 25 30

Leu Pro Val Asp Asp Ala Ile Asn Gly Leu Ser Glu Glu Gln Arg Gln  
35 40 45

Leu Arg Gln Thr Met Ala Lys Phe Leu Gln Glu His Leu Ala Pro Lys  
50 55 60

Ala Gln Glu Ile Asp Arg Ser Asn Glu Phe Lys Asn Leu Arg Glu Phe  
 65 70 75 80  
 Trp Lys Gln Leu Gly Asn Leu Gly Val Leu Gly Ile Thr Ala Pro Val  
 85 90 95  
 Gln Tyr Gly Gly Ser Gly Leu Gly Tyr Leu Glu His Val Leu Val Met  
 100 105 110  
 Glu Glu Ile Ser Arg Ala Ser Gly Ala Val Gly Leu Ser Tyr Gly Ala  
 115 120 125  
 His Ser Asn Leu Cys Ile Asn Gln Leu Val Arg Asn Gly Asn Glu Ala  
 130 135 140  
 Gln Lys Glu Lys Tyr Leu Pro Lys Leu Ile Ser Gly Glu Tyr Ile Gly  
 145 150 155 160  
 Ala Leu Ala Met Ser Glu Pro Asn Ala Gly Ser Asp Val Val Ser Met  
 165 170 175  
 Lys Leu Lys Ala Glu Lys Lys Gly Asn His Tyr Ile Leu Asn Gly Asn  
 180 185 190  
 Lys Phe Trp Ile Thr Asn Gly Pro Asp Ala Asp Val Leu Ile Val Tyr  
 195 200 205  
 Ala Lys Thr Asp Leu Ala Ala Val Pro Ala Ser Arg Gly Ile Thr Ala  
 210 215 220  
 Phe Ile Val Glu Lys Gly Met Pro Gly Phe Ser Thr Ser Lys Lys Leu  
 225 230 235 240  
 Asp Lys Leu Gly Met Arg Gly Ser Asn Thr Cys Glu Leu Ile Phe Glu  
 245 250 255  
 Asp Cys Lys Ile Pro Ala Ala Asn Ile Leu Gly His Glu Asn Lys Gly  
 260 265 270  
 Val Tyr Val Leu Met Ser Gly Leu Asp Leu Glu Arg Leu Val Leu Ala  
 275 280 285  
 Gly Gly Pro Leu Gly Leu Met Gln Ala Val Leu Asp His Thr Ile Pro  
 290 295 300  
 Tyr Leu His Val Arg Glu Ala Phe Gly Gln Lys Ile Gly His Phe Gln  
 305 310 315 320

Leu Met Gln Gly Lys<sub>325</sub> Met Ala Asp Met Tyr<sub>330</sub> Thr Arg Leu Met Ala<sub>335</sub> Cys

Arg Gln Tyr Val<sub>340</sub> Tyr Asn Val Ala Lys<sub>345</sub> Ala Cys Asp Glu Gly<sub>350</sub> His Cys

Thr Ala Lys<sub>355</sub> Asp Cys Ala Gly Val<sub>360</sub> Ile Leu Tyr Ser Ala<sub>365</sub> Glu Cys Ala

Thr Gln Val Ala Leu Asp Gly<sub>375</sub> Ile Gln Cys Phe Gly<sub>380</sub> Gly Asn Gly Tyr

Ile Asn Asp Phe Pro Met<sub>390</sub> Gly Arg Phe Leu Arg<sub>395</sub> Asp Ala Lys Leu Tyr<sub>400</sub>

Glu Ile Gly Ala Gly<sub>405</sub> Thr Ser Glu Val Arg<sub>410</sub> Arg Leu Val Ile Gly<sub>415</sub> Arg

Ala Phe Asn Ala<sub>420</sub> Asp Phe His

<210> 24  
<211> 392  
<212> PRT  
<213> Homo sapiens

<400> 24

Met Ala Val Val Ala<sub>5</sub> Ala Ala Ala Gly Trp<sub>10</sub> Leu Leu Arg Leu Arg<sub>15</sub> Ala

Ala Gly Ala Glu<sub>20</sub> Gly His Trp Arg Arg<sub>25</sub> Leu Pro Gly Ala Gly<sub>30</sub> Leu Ala

Arg Gly Phe<sub>35</sub> Leu His Pro Ala Ala<sub>40</sub> Thr Val Glu Asp Ala<sub>45</sub> Ala Gln Arg

Arg Gln Val Ala His Phe<sub>55</sub> Thr Phe Gln Pro Asp Pro<sub>60</sub> Glu Pro Arg Glu

Tyr Gly Gln Thr Gln Lys<sub>70</sub> Met Asn Leu Phe Gln<sub>75</sub> Ser Val Thr Ser Ala<sub>80</sub>

Leu Asp Asn Ser Leu<sub>85</sub> Ala Lys Asp Pro Thr<sub>90</sub> Ala Val Ile Phe Gly<sub>95</sub> Glu

Asp Val Ala Phe<sub>100</sub> Gly Gly Val Phe Arg<sub>105</sub> Cys Thr Val Gly Leu<sub>110</sub> Arg Asp

Lys Tyr Gly Lys Asp Arg Val Phe Asn Thr Pro Leu Cys Glu Gln Gly  
 115 120 125  
 Ile Val Gly Phe Gly Ile Gly Ile Ala Val Thr Gly Ala Thr Ala Ile  
 130 135 140  
 Ala Glu Ile Gln Phe Ala Asp Tyr Ile Phe Pro Ala Phe Asp Gln Ile  
 145 150 155 160  
 Val Asn Glu Ala Ala Lys Tyr Arg Tyr Arg Ser Gly Asp Leu Phe Asn  
 165 170 175  
 Cys Gly Ser Leu Thr Ile Arg Ser Pro Trp Gly Cys Val Gly His Gly  
 180 185 190  
 Ala Leu Tyr His Ser Gln Ser Pro Glu Ala Phe Phe Ala His Cys Pro  
 195 200 205  
 Gly Ile Lys Val Val Ile Pro Arg Ser Pro Phe Gln Ala Lys Gly Leu  
 210 215 220  
 Leu Leu Ser Cys Ile Glu Asp Lys Asn Pro Cys Ile Phe Phe Glu Pro  
 225 230 235 240  
 Lys Ile Leu Tyr Arg Ala Ala Ala Glu Glu Val Pro Ile Glu Pro Tyr  
 245 250 255  
 Asn Ile Pro Leu Ser Gln Ala Glu Val Ile Gln Glu Gly Ser Asp Val  
 260 265 270  
 Thr Leu Val Ala Trp Gly Thr Gln Val His Val Ile Arg Glu Val Ala  
 275 280 285  
 Ser Met Ala Lys Glu Lys Leu Gly Val Ser Cys Glu Val Ile Asp Leu  
 290 295 300  
 Arg Thr Ile Ile Pro Trp Asp Val Asp Thr Ile Cys Lys Ser Val Ile  
 305 310 315 320  
 Lys Thr Gly Arg Leu Leu Ile Ser His Glu Ala Pro Leu Thr Gly Gly  
 325 330 335  
 Phe Ala Ser Glu Ile Ser Ser Thr Val Gln Glu Glu Cys Phe Leu Asn  
 340 345 350  
 Leu Glu Ala Pro Ile Ser Arg Val Cys Gly Tyr Asp Thr Pro Phe Pro  
 355 360 365

His Ile Phe Glu Pro Phe Tyr Ile Pro Asp Lys Trp Lys Cys Tyr Asp  
370 375 380

Ala Leu Arg Lys Met Ile Asn Tyr  
385 390

<210> 25  
<211> 1000  
<212> PRT  
<213> Homo sapiens

<400> 25

Met Phe His Leu Arg Thr Cys Ala Ala Lys Leu Arg Pro Leu Thr Ala  
1 5 10 15

Ser Gln Thr Val Lys Thr Phe Ser Gln Asn Arg Pro Ala Ala Ala Arg  
20 25 30

Thr Phe Gln Gln Ile Arg Cys Tyr Ser Ala Pro Val Ala Ala Glu Pro  
35 40 45

Phe Leu Ser Gly Thr Ser Ser Asn Tyr Val Glu Glu Met Tyr Cys Ala  
50 55 60

Trp Leu Glu Asn Pro Lys Ser Val His Lys Ser Trp Asp Ile Phe Phe  
65 70 75 80

Arg Asn Thr Asn Ala Gly Ala Pro Pro Ala Thr Leu Pro Glu Ser Pro  
85 90 95

Ser Leu Ser Arg Gly Ser Leu Ala Ala Val Ala His Ala Gln Ser Leu  
100 105 110

Val Glu Ala Gln Pro Asn Val Asp Lys Leu Val Glu Asp His Leu Ala  
115 120 125

Val Gln Ser Leu Ile Arg Ala Tyr Gln Ile Arg Gly His His Val Ala  
130 135 140

Gln Leu Asp Pro Leu Gly Ile Leu Asp Ala Asp Leu Asp Ser Ser Val  
145 150 155 160

Ala Pro Leu Thr Leu Ser His Pro Gln Thr Asp Leu Gly Trp Met Ser  
165 170 175

Leu Thr Ser Thr Arg Ser Ser Thr Cys Pro Pro Thr Thr Phe Ile Gly  
180 185 190

Gly Gln Glu Ser Ala Leu Pro Leu Arg Glu Ile Ile Arg Arg Leu Glu  
Page 50

195

200

205

Met Ala Tyr Cys Gln His Ile Gly Val Glu Phe Met Phe Ile Asn Asp  
 210 215 220

Leu Glu Gln Cys Gln Trp Ile Arg Gln Lys Phe Glu Thr Pro Gly Ile  
 225 230 235 240

Met Gln Phe Thr Asn Glu Glu Lys Arg Thr Leu Leu Ala Arg Leu Val  
 245 250 255

Arg Ser Thr Arg Phe Glu Glu Phe Leu Gln Arg Lys Trp Ser Ser Glu  
 260 265 270

Lys Arg Phe Gly Leu Glu Gly Cys Glu Val Leu Ile Pro Ala Leu Lys  
 275 280 285

Thr Ile Ile Asp Lys Ser Ser Glu Asn Gly Val Asp Tyr Val Ile Met  
 290 295 300

Gly Met Pro His Arg Gly Arg Leu Asn Val Leu Ala Asn Val Ile Arg  
 305 310 315 320

Lys Glu Leu Glu Gln Ile Phe Cys Gln Phe Asp Ser Lys Leu Glu Ala  
 325 330 335

Ala Asp Glu Gly Leu Arg Arg Cys Glu Val Pro Pro Gly His Val Ser  
 340 345 350

Pro Gln Asp Gln Ser Cys His Arg Pro Gly Thr Leu Pro Cys Pro Trp  
 355 360 365

Trp Pro Asn Pro Ser His Leu Glu Ala Ala Asp Pro Val Val Met Gly  
 370 375 380

Lys Thr Lys Ala Glu Gln Phe Tyr Cys Gly Asp Thr Glu Gly Lys Lys  
 385 390 395 400

Val Met Ser Ile Leu Leu His Gly Asp Ala Ala Phe Ala Gly Gln Gly  
 405 410 415

Ile Val Tyr Glu Thr Phe His Leu Ser Asp Leu Pro Ser Tyr Thr Thr  
 420 425 430

His Gly Thr Val His Val Val Val Asn Asn Gln Ile Gly Phe Thr Thr  
 435 440 445

Asp Pro Arg Met Ala Arg Ser Ser Pro Tyr Pro Thr Asp Val Ala Arg  
 Page 51

450

455

460

Val Val Asn Ala Pro Ile Phe His Val Asn Ser Asp Asp Pro Glu Ala  
465 470 475 480

Val Met Tyr Val Cys Lys Val Ala Ala Glu Trp Arg Ser Thr Phe His  
485 490 495

Lys Asp Val Val Val Asp Leu Val Cys Tyr Arg Arg Asn Gly His Asn  
500 505 510

Glu Met Asp Glu Pro Met Phe Thr Gln Pro Leu Met Tyr Lys Gln Ile  
515 520 525

Arg Lys Gln Lys Pro Val Leu Gln Lys Tyr Ala Glu Leu Leu Val Ser  
530 535 540

Gln Gly Val Val Asn Gln Pro Glu Tyr Glu Glu Glu Ile Ser Lys Tyr  
545 550 555 560

Asp Lys Ile Cys Glu Glu Ala Phe Ala Arg Ser Lys Asp Glu Lys Ile  
565 570 575

Leu His Ile Lys His Trp Leu Asp Ser Pro Trp Pro Gly Phe Phe Thr  
580 585 590

Leu Asp Gly Gln Pro Arg Ser Met Ser Cys Pro Ser Thr Gly Leu Thr  
595 600 605

Glu Asp Ile Leu Thr His Ile Gly Asn Val Ala Ser Ser Val Pro Val  
610 615 620

Glu Asn Phe Thr Ile His Gly Gly Leu Ser Arg Ile Leu Lys Thr Arg  
625 630 635 640

Gly Glu Met Val Lys Asn Arg Thr Val Asp Trp Ala Leu Ala Glu Tyr  
645 650 655

Met Ala Phe Gly Ser Leu Leu Lys Glu Gly Ile His Ile Arg Leu Ser  
660 665 670

Gly Gln Asp Val Glu Arg Gly Thr Phe Ser His Arg His His Val Leu  
675 680 685

His Asp Gln Asn Val Asp Lys Arg Thr Cys Ile Pro Met Asn His Leu  
690 695 700

Trp Pro Asn Gln Ala Pro Tyr Thr Val Cys Asn Ser Ser Leu Ser Glu  
Page 52



705		710		715		720
Tyr Gly Val	Leu Gly 725	Phe Gly Ala Gly	Leu 730	Arg Met Ala Ser	Pro Asn 735	
Ala Leu Val	Leu 740	Trp Glu Ala Gln	Phe 745	Gly Asp Phe His	Asn 750	Thr Ala
Gln Cys	Ile 755	Ile Asp Gln Phe	Ile 760	Cys Pro Gly Gln	Ala 765	Lys Trp Val
Arg Gln	Asn 770	Gly Ile Val	Leu 775	Leu Leu Pro Leu	Gly 780	Met Glu Gly Met
Gly 785	Pro Glu His	Ser 790	Gly Pro Pro Arg	Ala 795	Phe Leu Gln Met	Cys 800
Asn Asp Asp	Pro 805	Val Leu Pro Asp	Leu 810	Lys Glu Ala Asn	Phe 815	Asp
Ile Asn Gln	Leu 820	Tyr Asp Cys Asn	Trp 825	Val Val Val	Asn 830	Cys Ser Thr
Pro Gly	Asn 835	Phe Phe His Val	Leu 840	Arg Arg Gln Ile	Leu 845	Leu Pro Phe
Arg Lys	Pro 850	Leu Ile Ile Phe	Thr 855	Pro Lys Ser	Leu 860	Leu Arg His Pro
Glu 865	Ala Arg Ser	Ser 870	Phe Asp Glu Met	Leu 875	Pro Gly Thr His Phe	Gln 880
Arg Val Ile	Pro 885	Glu Asp Gly Pro	Ala 890	Ala Gln Asn Pro	Glu 895	Asn Val
Lys Arg	Leu 900	Leu Phe Cys Thr	Gly 905	Lys Val Tyr Tyr	Asp 910	Leu Thr Arg
Glu Arg	Lys 915	Ala Arg Asp Met	Val 920	Gly Gln Val Ala	Ile 925	Thr Arg Ile
Glu His	Val 930	Ser Pro Phe	Pro 935	Phe Asp Leu Leu	Leu 940	Lys Glu Val Gln
Lys 945	Tyr Pro Asn	Ala Glu 950	Leu Ala Trp Cys	Gln 955	Glu Glu His Lys	Asn 960
Gln Gly Tyr Tyr	Asp Tyr Val	Lys Pro Arg	Leu Arg Thr Thr	Ile Ser		

965

970

975

Arg Ala Lys Pro Val Trp Tyr Ala Gly Arg Asp Pro Ala Ala Ala Pro  
                   980                  985                  990

Arg Thr Gly Asn Lys Lys Thr His  
           995                  1000

&lt;210&gt; 26

&lt;211&gt; 584

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 26

Met Leu Ser Arg Leu Arg Val Val Ser Thr Thr Cys Thr Leu Ala Cys  
   1                  5                  10                  15

Arg His Leu His Ile Lys Glu Lys Gly Lys Pro Leu Met Leu Asn Pro  
                   20                  25                  30

Arg Thr Asn Lys Gly Met Ala Phe Thr Leu Gln Glu Arg Gln Met Leu  
           35                  40                  45

Gly Leu Gln Gly Leu Leu Pro Pro Lys Ile Glu Thr Gln Asp Ile Gln  
   50                  55                  60

Ala Leu Arg Phe His Arg Asn Leu Lys Lys Met Thr Ser Pro Leu Glu  
   65                  70                  75                  80

Lys Tyr Ile Tyr Ile Met Gly Ile Gln Glu Arg Asn Glu Lys Leu Phe  
                   85                  90                  95

Tyr Arg Ile Leu Gln Asp Asp Ile Glu Ser Leu Met Pro Ile Val Tyr  
           100                  105                  110

Thr Pro Thr Val Gly Leu Ala Cys Ser Gln Tyr Gly His Ile Phe Arg  
           115                  120                  125

Arg Pro Lys Gly Leu Phe Ile Ser Ile Ser Asp Arg Gly His Val Arg  
   130                  135                  140

Ser Ile Val Asp Asn Trp Pro Glu Asn His Val Lys Ala Val Val Val  
  145                  150                  155                  160

Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly Asp Leu Gly Val Tyr Gly  
           165                  170                  175

Met Gly Ile Pro Val Gly Lys Leu Cys Leu Tyr Thr Ala Cys Ala Gly  
           180                  185                  190

Ile Arg Pro Asp Arg Cys Leu Pro Val Cys Ile Asp Val Gly Thr Asp  
 195 200 205  
 Asn Ile Ala Leu Leu Lys Asp Pro Phe Tyr Met Gly Leu Tyr Gln Lys  
 210 215 220  
 Arg Asp Arg Thr Gln Gln Tyr Asp Asp Leu Ile Asp Glu Phe Met Lys  
 225 230 235 240  
 Ala Ile Thr Asp Arg Tyr Gly Arg Asn Thr Leu Ile Gln Phe Glu Asp  
 245 250 255  
 Phe Gly Asn His Asn Ala Phe Arg Phe Leu Arg Lys Tyr Arg Glu Lys  
 260 265 270  
 Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly Thr Ala Ala Val Ala Leu  
 275 280 285  
 Ala Gly Leu Leu Ala Ala Gln Lys Val Ile Ser Lys Pro Ile Ser Glu  
 290 295 300  
 His Lys Ile Leu Phe Leu Gly Ala Gly Glu Ala Ala Leu Gly Ile Ala  
 305 310 315 320  
 Asn Leu Ile Val Met Ser Met Val Glu Asn Gly Leu Ser Glu Gln Glu  
 325 330 335  
 Ala Gln Lys Lys Ile Trp Met Phe Asp Lys Tyr Gly Leu Leu Val Lys  
 340 345 350  
 Gly Arg Lys Ala Lys Ile Asp Ser Tyr Gln Glu Pro Phe Thr His Ser  
 355 360 365  
 Ala Pro Glu Ser Ile Pro Asp Thr Phe Glu Asp Ala Val Asn Ile Leu  
 370 375 380  
 Lys Pro Ser Thr Ile Ile Gly Val Ala Gly Ala Gly Arg Leu Phe Thr  
 385 390 395 400  
 Pro Asp Val Ile Arg Ala Met Ala Ser Ile Asn Glu Arg Pro Val Ile  
 405 410 415  
 Phe Ala Leu Ser Asn Pro Thr Ala Gln Ala Glu Cys Thr Ala Glu Glu  
 420 425 430  
 Ala Tyr Thr Leu Thr Glu Gly Arg Cys Leu Phe Ala Ser Gly Ser Pro  
 435 440 445

Phe Gly Pro Val Lys Leu Thr Asp Gly Arg Val Phe Thr Pro Gly Gln  
450 455 460

Gly Asn Asn Val Tyr Ile Phe Pro Gly Val Ala Leu Ala Val Ile Leu  
465 470 475 480

Cys Asn Thr Arg His Ile Ser Asp Ser Val Phe Leu Glu Ala Ala Lys  
485 490 495

Ala Leu Thr Ser Gln Leu Thr Asp Glu Glu Leu Ala Gln Gly Arg Leu  
500 505 510

Tyr Pro Pro Leu Ala Asn Ile Gln Glu Val Ser Ile Asn Ile Ala Ile  
515 520 525

Lys Val Thr Glu Tyr Leu Tyr Ala Asn Lys Met Ala Phe Arg Tyr Pro  
530 535 540

Glu Pro Glu Asp Lys Ala Lys Tyr Val Lys Glu Arg Thr Trp Arg Ser  
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Glu Tyr Asp Ser Leu Leu Pro Asp Val Tyr Glu Trp Pro Glu Ser Ala  
565 570 575

Ser Ser Pro Pro Val Ile Thr Glu  
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<210> 27  
<211> 496  
<212> PRT  
<213> Homo sapiens

<400> 27

Met Ala Ser Arg Cys Trp Arg Trp Trp Gly Trp Ser Ala Trp Pro Arg  
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Thr Arg Leu Pro Pro Ala Gly Ser Thr Pro Ser Phe Cys His His Phe  
20 25 30

Ser Thr Gln Glu Lys Thr Pro Gln Ile Cys Val Val Gly Ser Gly Pro  
35 40 45

Ala Gly Phe Tyr Thr Ala Gln His Leu Leu Lys His Pro Gln Ala His  
50 55 60

Val Asp Ile Tyr Glu Lys Gln Pro Val Pro Phe Gly Leu Val Arg Phe  
65 70 75 80

Gly Val Ala Pro Asp His Pro Glu Val Lys Asn Val Ile Asn Thr Phe  
 85 90 95  
 Thr Gln Thr Ala His Ser Gly Arg Cys Ala Phe Trp Gly Asn Val Glu  
 100 105 110  
 Val Gly Arg Asp Val Thr Val Pro Glu Leu Gln Glu Ala Tyr His Ala  
 115 120 125  
 Val Val Leu Ser Tyr Gly Ala Glu Asp His Arg Ala Leu Glu Ile Pro  
 130 135 140  
 Gly Glu Glu Leu Pro Gly Val Cys Ser Ala Arg Ala Phe Val Gly Trp  
 145 150 155 160  
 Tyr Asn Gly Leu Pro Glu Asn Gln Glu Leu Glu Pro Asp Leu Ser Cys  
 165 170 175  
 Asp Thr Ala Val Ile Leu Gly Gln Gly Asn Val Ala Leu Asp Val Ala  
 180 185 190  
 Arg Ile Leu Leu Thr Pro Pro Glu His Leu Glu Ala Leu Leu Leu Cys  
 195 200 205  
 Gln Arg Thr Asp Ile Thr Leu Ala Ala Leu Gly Val Leu Arg Gln Ser  
 210 215 220  
 Arg Val Lys Thr Val Trp Leu Val Gly Arg Arg Gly Pro Leu Gln Val  
 225 230 235 240  
 Ala Phe Thr Ile Leu Glu Leu Arg Glu Met Ile Gln Leu Pro Gly Ala  
 245 250 255  
 Arg Pro Ile Leu Asp Pro Val Asp Phe Leu Gly Leu Gln Asp Lys Ile  
 260 265 270  
 Lys Glu Val Pro Arg Pro Arg Lys Arg Leu Thr Glu Leu Leu Leu Arg  
 275 280 285  
 Thr Ala Thr Glu Lys Pro Gly Pro Ala Glu Ala Ala Arg Gln Ala Ser  
 290 295 300  
 Ala Ser Arg Ala Trp Gly Leu Arg Phe Phe Arg Ser Pro Gln Gln Val  
 305 310 315 320  
 Leu Pro Ser Pro Asp Gly Arg Arg Ala Ala Gly Val Arg Leu Ala Val  
 325 330 335

Thr Arg Leu Glu Gly Val Asp Glu Ala Thr Arg Ala Val Pro Thr Gly  
340 345 350

Asp Met Glu Asp Leu Pro Cys Gly Leu Val Leu Ser Ser Ile Gly Tyr  
355 360 365

Lys Ser Arg Pro Val Asp Pro Ser Val Pro Phe Asp Ser Lys Leu Gly  
370 375 380

Val Ile Pro Asn Val Glu Gly Arg Val Met Asp Val Pro Gly Leu Tyr  
385 390 395 400

Cys Ser Gly Trp Val Leu Arg Gly Pro Thr Gly Val Ile Ala Thr Thr  
405 410 415

Met Thr Asp Ser Phe Leu Thr Gly Gln Met Leu Leu Gln Asp Leu Lys  
420 425 430

Ala Gly Leu Leu Pro Ser Gly Pro Arg Pro Gly Tyr Ala Ala Ile Gln  
435 440 445

Ala Leu Leu Ser Ser Arg Gly Val Arg Pro Val Ser Phe Ser Asp Trp  
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Lys Leu Asp Ala Glu Glu Val Ala Arg Gly Gln Gly Thr Gly Lys Pro  
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Arg Glu Lys Leu Val Asp Pro Gln Gly Met Leu Arg Leu Leu Gly His  
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<210> 28  
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<212> PRT  
<213> Homo sapiens

<400> 28

Met Ala Ala Arg Leu Leu Arg Gly Ser Leu Arg Val Leu Gly Gly His  
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Arg Ala Pro Arg Gln Leu Pro Ala Ala Arg Cys Ser His Ser Gly Gly  
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Glu Glu Arg Leu Glu Thr Pro Ser Ala Lys Lys Leu Thr Asp Ile Gly  
35 40 45

Ile Arg Arg Ile Phe Ser Pro Glu His Asp Ile Phe Arg Lys Ser Val  
50 55 60

Arg Lys Phe Phe Gln Glu Glu Val Ile Pro His His Ser Glu Trp Glu  
 65 70 75 80  
 Lys Ala Gly Glu Val Ser Arg Glu Val Trp Glu Lys Ala Gly Lys Gln  
 85 90 95  
 Gly Leu Leu Gly Val Asn Ile Ala Glu His Leu Gly Gly Ile Gly Gly  
 100 105 110  
 Asp Leu Tyr Ser Ala Ala Ile Val Trp Glu Glu Gln Ala Tyr Ser Asn  
 115 120 125  
 Cys Ser Gly Pro Gly Phe Ser Ile His Ser Gly Ile Val Met Ser Tyr  
 130 135 140  
 Ile Thr Asn His Gly Ser Glu Glu Gln Ile Lys His Phe Ile Pro Gln  
 145 150 155 160  
 Met Thr Ala Gly Lys Cys Ile Gly Ala Ile Ala Met Thr Glu Pro Gly  
 165 170 175  
 Ala Gly Ser Asp Leu Gln Gly Ile Lys Thr Asn Ala Lys Lys Asp Gly  
 180 185 190  
 Ser Asp Trp Ile Leu Asn Gly Ser Lys Val Phe Ile Ser Asn Gly Ser  
 195 200 205  
 Leu Ser Asp Val Val Ile Val Val Ala Val Thr Asn His Glu Ala Pro  
 210 215 220  
 Ser Pro Ala His Gly Ile Ser Leu Phe Leu Val Glu Asn Gly Met Lys  
 225 230 235 240  
 Gly Phe Ile Lys Gly Arg Lys Leu His Lys Met Gly Leu Lys Ala Gln  
 245 250 255  
 Asp Thr Ala Glu Leu Phe Phe Glu Asp Ile Arg Leu Pro Ala Ser Ala  
 260 265 270  
 Leu Leu Gly Glu Glu Asn Lys Gly Phe Tyr Tyr Ile Met Lys Glu Leu  
 275 280 285  
 Pro Gln Glu Arg Leu Leu Ile Ala Asp Val Ala Ile Ser Ala Ser Glu  
 290 295 300  
 Phe Met Phe Glu Glu Thr Arg Asn Tyr Val Lys Gln Arg Lys Ala Phe  
 305 310 315 320

Gly Lys Thr Val Ala His Leu Gln Thr Val Gln His Lys Leu Ala Glu  
325 330 335

Leu Lys Thr His Ile Cys Val Thr Arg Ala Phe Val Asp Asn Cys Leu  
340 345 350

Gln Leu His Glu Ala Lys Arg Leu Asp Ser Ala Thr Ala Cys Met Ala  
355 360 365

Lys Tyr Trp Ala Ser Glu Leu Gln Asn Ser Val Ala Tyr Asp Cys Val  
370 375 380

Gln Leu His Gly Gly Trp Gly Tyr Met Trp Glu Tyr Pro Ile Ala Lys  
385 390 395 400

Ala Tyr Val Asp Ala Arg Val Gln Pro Ile Tyr Gly Gly Thr Asn Glu  
405 410 415

Ile Met Lys Glu Leu Ile Ala Arg Glu Ile Val Phe Asp Lys  
420 425 430

<210> 29  
<211> 517  
<212> PRT  
<213> Homo sapiens

<400> 29

Met Leu Arg Phe Leu Ala Pro Arg Leu Leu Ser Leu Gln Gly Arg Thr  
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Ala Arg Tyr Ser Ser Ala Ala Ala Leu Pro Ser Pro Ile Leu Asn Pro  
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Asp Ile Pro Tyr Asn Gln Leu Phe Ile Asn Asn Glu Trp Gln Asp Ala  
35 40 45

Val Ser Lys Lys Thr Phe Pro Thr Val Asn Pro Thr Thr Gly Glu Val  
50 55 60

Ile Gly His Val Ala Glu Gly Asp Arg Ala Asp Val Asp Arg Ala Val  
65 70 75 80

Lys Ala Ala Arg Glu Ala Phe Arg Leu Gly Ser Pro Trp Arg Arg Met  
85 90 95

Asp Ala Ser Glu Arg Gly Arg Leu Leu Asn Arg Leu Ala Asp Leu Val  
100 105 110

Glu Arg Asp Arg Val Tyr Leu Ala Ser Leu Glu Thr Leu Asp Asn Gly  
Page 60



115					120					125					
Lys	Pro	Phe	Gln	Glu	Ser	Tyr	Ala	Leu	Asp	Leu	Asp	Glu	Val	Ile	Lys
	130					135					140				
Val	Tyr	Arg	Tyr	Phe	Ala	Gly	Trp	Ala	Asp	Lys	Trp	His	Gly	Lys	Thr
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Ile	Pro	Met	Asp	Gly	Gln	His	Phe	Cys	Phe	Thr	Arg	His	Glu	Pro	Val
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Gly	Val	Cys	Gly	Gln	Ile	Ile	Pro	Trp	Asn	Phe	Pro	Leu	Val	Met	Gln
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Gly	Trp	Lys	Leu	Ala	Pro	Ala	Leu	Ala	Thr	Gly	Asn	Thr	Val	Val	Met
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Lys	Val	Ala	Glu	Gln	Thr	Pro	Leu	Ser	Ala	Leu	Tyr	Leu	Ala	Ser	Leu
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Ile	Lys	Glu	Ala	Gly	Phe	Pro	Pro	Gly	Val	Val	Asn	Ile	Ile	Thr	Gly
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Tyr	Gly	Pro	Thr	Ala	Gly	Ala	Ala	Ile	Ala	Gln	His	Met	Asp	Val	Asp
				245					250					255	
Lys	Val	Ala	Phe	Thr	Gly	Ser	Thr	Glu	Val	Gly	His	Leu	Ile	Gln	Lys
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Ala	Ala	Gly	Asp	Ser	Asn	Leu	Lys	Arg	Val	Thr	Leu	Glu	Leu	Gly	Gly
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Lys	Ser	Pro	Ser	Ile	Val	Leu	Ala	Asp	Ala	Asp	Met	Glu	His	Ala	Val
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Glu	Gln	Cys	His	Glu	Ala	Leu	Phe	Phe	Asn	Met	Gly	Gln	Cys	Cys	Cys
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Ala	Gly	Ser	Arg	Thr	Phe	Val	Glu	Glu	Ser	Ile	Tyr	Asn	Glu	Phe	Leu
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Glu	Arg	Thr	Val	Glu	Lys	Ala	Lys	Gln	Arg	Lys	Val	Gly	Asn	Pro	Phe
			340					345					350		
Glu	Leu	Asp	Thr	Gln	Gln	Gly	Pro	Gln	Val	Asp	Lys	Glu	Gln	Phe	Glu
		355					360					365			
Arg	Val	Leu	Gly	Tyr	Ile	Gln	Leu	Gly	Gln	Lys	Glu	Gly	Ala	Lys	Leu

370

375

380

Leu Cys Gly Gly Glu Arg Phe Gly Glu Arg Gly Phe Phe Ile Lys Pro  
 385 390 395 400

Thr Val Phe Gly Gly Val Gln Asp Asp Met Arg Ile Ala Lys Glu Glu  
 405 410 415

Ile Phe Gly Pro Val Gln Pro Leu Phe Lys Phe Lys Lys Ile Glu Glu  
 420 425 430

Val Val Glu Arg Ala Asn Asn Thr Arg Tyr Gly Leu Ala Ala Ala Val  
 435 440 445

Phe Thr Arg Asp Leu Asp Lys Ala Met Tyr Phe Thr Gln Ala Leu Gln  
 450 455 460

Ala Gly Thr Val Trp Val Asn Thr Tyr Asn Ile Val Thr Cys His Thr  
 465 470 475 480

Pro Phe Gly Gly Phe Lys Glu Ser Gly Asn Gly Arg Glu Leu Gly Glu  
 485 490 495

Asp Gly Leu Lys Ala Tyr Thr Glu Val Lys Thr Val Thr Ile Lys Val  
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Pro Gln Lys Asn Ser  
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<210> 30  
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 <212> PRT  
 <213> Homo sapiens

<400> 30

Met Leu Ala Leu Arg Cys Gly Ser Arg Trp Leu Gly Leu Leu Ser Val  
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Pro Arg Ser Val Pro Leu Arg Leu Pro Ala Ala Arg Ala Cys Ser Lys  
 20 25 30

Gly Ser Gly Asp Pro Ser Ser Ser Ser Ser Gly Asn Pro Leu Val  
 35 40 45

Tyr Leu Asp Val Asp Ala Asn Gly Lys Pro Leu Gly Arg Val Val Leu  
 50 55 60

Glu Leu Lys Ala Asp Val Val Pro Lys Thr Ala Glu Asn Phe Arg Ala  
 65 70 75 80

Leu Cys Thr Gly Glu Lys Gly Phe Gly Tyr Lys Gly Ser Thr Phe His  
85 90 95

Arg Val Ile Pro Ser Phe Met Cys Gln Ala Gly Asp Phe Thr Asn His  
100 105 110

Asn Gly Thr Gly Gly Lys Ser Ile Tyr Gly Ser Arg Phe Pro Asp Glu  
115 120 125

Asn Phe Thr Leu Lys His Val Gly Pro Gly Val Leu Ser Met Ala Asn  
130 135 140

Ala Gly Pro Asn Thr Asn Gly Ser Gln Phe Phe Ile Cys Thr Ile Lys  
145 150 155 160

Thr Asp Trp Leu Asp Gly Lys His Val Val Phe Gly His Val Lys Glu  
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Gly Met Asp Val Val Lys Lys Ile Glu Ser Phe Gly Ser Lys Ser Gly  
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Arg Thr Ser Lys Lys Ile Val Ile Thr Asp Cys Gly Gln Leu Ser  
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<213> Neurospora crassa

<400> 31

Met Phe Ser Arg Leu Ala Ala Arg Leu Pro Lys Ala Ser Ala Leu Asn  
1 5 10 15

Gly Val Ala Ala Arg Gln Val Arg Asn Leu Ser Gln Pro Ala Ile Thr  
20 25 30

Gly Ser Lys Gly Arg Asn Met Pro Ala Arg Glu Pro Arg Thr Thr Ala  
35 40 45

Ala Ala Thr Gly Ala Glu Ala Thr Phe Thr Ile Arg Asp Gly Pro Val  
50 55 60

Phe Gln Gly Thr Ala Phe Gly Ala Asn Thr Asn Ile Ser Gly Glu Ala  
65 70 75 80

Val Phe Thr Thr Ser Leu Val Gly Tyr Pro Glu Ser Met Thr Asp Pro  
85 90 95

Ser Tyr Arg Gly Gln Ile Leu Val Phe Thr Gln Pro Leu Ile Gly Asn  
100 105 110  
Tyr Gly Val Pro Ser Asn Glu Arg Asp Glu Phe Asn Leu Leu Ser Thr  
115 120 125  
Ser Ser Leu Pro Thr Ser Ser Ala Pro Val Ser Leu Ser Pro Met Ser  
130 135 140  
Leu Pro Ser Thr Ala Thr Gly Leu Leu Phe Arg Ala Trp Ala Ser Gly  
145 150 155 160  
Ala Pro Ala Arg Ala Phe Pro Pro Leu Ser Gly Val Asp Thr Arg Ala  
165 170 175  
Ile Val Thr Tyr Leu Arg Glu Gln Gly Ser Ser Leu Ala Arg Ile Ser  
180 185 190  
Ile Gly Asp Glu Tyr Asp Ala Asp Glu Asp Glu Gly Phe Ile Asp Pro  
195 200 205  
Gly Gln Ile Asn Leu Val Lys Arg Val Ser Thr Lys Ala Pro Phe Val  
210 215 220  
Val Thr Asn Pro Asn Ala Lys Phe His Val Ala Leu Ile Asp Cys Gly  
225 230 235 240  
Val Lys Glu Asn Ile Leu Arg Ser Leu Val Ser Arg Gly Ala Ser Val  
245 250 255  
Thr Val Phe Pro Tyr Asn Tyr Pro Ile His Lys Val Ala Glu Asn Phe  
260 265 270  
Asp Gly Val Phe Ile Ser Asn Gly Pro Gly Asp Pro Thr His Cys Gln  
275 280 285  
Glu Thr Val Tyr Asn Leu Ala Lys Leu Met Glu Thr Ser Pro Ile Pro  
290 295 300  
Ile Met Gly Ile Cys Leu Gly His Gln Leu Leu Ala Leu Ala Val Gly  
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Ala Lys Thr Ile Lys Leu Ser Met Val Ile Arg Ala His Asn Ile Pro  
325 330 335  
Ala Leu Asp Leu Thr Thr Gly Gln Cys His Ile Thr Ser Gln Asn His  
340 345 350

Gly Tyr Ala Val Asp Ile Ser Thr Leu Pro Ser Asp Phe Lys Glu Tyr  
355 360 365

Phe Val Asn Leu Asn Asp Gly Ser Asn Glu Gly Met Met His Lys Thr  
370 375 380

Arg Pro Ile Phe Ser Thr Gln Phe His Pro Glu Ala Lys Gly Gly Pro  
385 390 395 400

Met Asp Ser Ser Tyr Leu Phe Asp Lys Tyr Met Glu Asn Val Glu Leu  
405 410 415

Phe Lys Ser Asn Ser Gln Val Tyr Arg Asp Asn Arg Pro Thr Gln Phe  
420 425 430

Met Ile Asp Ile Leu Ser Lys Glu Arg Val Gly Val Glu Pro Thr Pro  
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Leu Ser Asn Ala Ala  
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<210> 32  
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<212> PRT  
<213> Homo sapiens

<400> 32

Gly Leu Arg Pro Pro Pro Gly Arg Phe Ser Arg Leu Pro Gly Lys  
1 5 10 15

Thr Leu Ser Ala Cys Asp Arg Glu Asn Gly Ala Arg Arg Pro Leu Leu  
20 25 30

Leu Gly Ser Thr Ser Phe Ile Pro Ile Gly Arg Arg Thr Tyr Ala Ser  
35 40 45

Ala Ala Glu Pro Val Gly Ser Lys Ala Val Leu Val Thr Gly Cys Asp  
50 55 60

Ser Gly Phe Gly Phe Ser Leu Ala Lys His Leu His Ser Lys Gly Phe  
65 70 75 80

Leu Val Phe Ala Gly Cys Leu Met Lys Asp Lys Gly His Asp Gly Val  
85 90 95

Lys Glu Leu Asp Ser Leu Asn Ser Asp Arg Leu Arg Thr Val Gln Leu  
100 105 110

Asn Val Phe Arg Ser Glu Glu Val Glu Lys Val Val Gly Asp Cys Pro  
 115 120 125  
 Phe Glu Pro Glu Gly Pro Glu Lys Gly Met Trp Gly Leu Val Asn Asn  
 130 135 140  
 Ala Gly Ile Ser Thr Phe Gly Glu Val Glu Phe Thr Ser Leu Glu Thr  
 145 150 155 160  
 Tyr Lys Gln Val Ala Glu Val Asn Leu Trp Gly Thr Val Arg Met Thr  
 165 170 175  
 Lys Ser Phe Leu Pro Leu Ile Arg Arg Ala Lys Gly Arg Val Val Asn  
 180 185 190  
 Ile Ser Ser Met Leu Gly Arg Met Ala Asn Pro Ala Arg Ser Pro Tyr  
 195 200 205  
 Cys Ile Thr Lys Phe Gly Val Glu Ala Phe Ser Asp Cys Leu Arg Tyr  
 210 215 220  
 Glu Met Tyr Pro Leu Gly Val Lys Val Ser Val Val Glu Pro Gly Asn  
 225 230 235 240  
 Phe Ile Ala Ala Thr Ser Leu Tyr Asn Pro Glu Ser Ile Gln Ala Ile  
 245 250 255  
 Ala Lys Lys Met Trp Glu Glu Leu Pro Glu Val Val Arg Lys Asp Tyr  
 260 265 270  
 Gly Lys Lys Tyr Phe Asp Glu Lys Ile Ala Lys Met Glu Thr Tyr Cys  
 275 280 285  
 Ser Ser Gly Ser Thr Asp Thr Ser Pro Val Ile Asp Ala Val Thr His  
 290 295 300  
 Ala Leu Thr Ala Thr Thr Pro Tyr Thr Arg Tyr His Pro Met Asp Tyr  
 305 310 315 320  
 Tyr Trp Trp Leu Arg Met Gln Ile Met Thr His Leu Pro Gly Ala Ile  
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 Ser Asp Met Ile Tyr Ile Arg  
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<210> 33  
 <211> 325  
 <212> PRT  
 <213> Homo sapiens

<400> 33

Met Ala Ala Met Arg Lys Ala Leu Pro Arg Arg Leu Val Gly Leu Ala  
1 5 10 15

Ser Leu Arg Ala Val Ser Thr Ser Ser Met Gly Thr Leu Pro Lys Arg  
20 25 30

Val Lys Ile Val Glu Val Gly Pro Arg Asp Gly Leu Gln Asn Glu Lys  
35 40 45

Asn Ile Val Ser Thr Pro Val Lys Ile Lys Leu Ile Asp Met Leu Ser  
50 55 60

Glu Ala Gly Leu Ser Val Ile Glu Thr Thr Ser Phe Val Ser Pro Lys  
65 70 75 80

Trp Val Pro Gln Met Gly Asp His Thr Glu Val Leu Lys Gly Ile Gln  
85 90 95

Lys Phe Pro Gly Ile Asn Tyr Pro Val Leu Thr Pro Asn Leu Lys Gly  
100 105 110

Phe Glu Ala Ala Val Ala Ala Gly Ala Lys Glu Val Val Ile Phe Gly  
115 120 125

Ala Ala Ser Glu Leu Phe Thr Lys Lys Asn Ile Asn Cys Ser Ile Glu  
130 135 140

Glu Ser Phe Gln Arg Phe Asp Ala Ile Leu Lys Ala Ala Gln Ser Ala  
145 150 155 160

Asn Ile Ser Val Arg Gly Tyr Val Ser Cys Ala Leu Gly Cys Pro Tyr  
165 170 175

Glu Gly Lys Ile Ser Pro Ala Lys Val Ala Glu Val Thr Lys Lys Phe  
180 185 190

Tyr Ser Met Gly Cys Tyr Glu Ile Ser Leu Gly Asp Thr Ile Gly Val  
195 200 205

Gly Thr Pro Gly Ile Met Lys Asp Met Leu Ser Ala Val Met Gln Glu  
210 215 220

Val Pro Leu Ala Ala Leu Ala Val His Cys His Asp Thr Tyr Gly Gln  
225 230 235 240

Ala Leu Ala Asn Thr Leu Met Ala Leu Gln Met Gly Val Ser Val Val  
Page 67

245

250

255

Asp Ser Ser Val Ala Gly Leu Gly Gly Cys Pro Tyr Ala Gln Gly Ala  
260 265 270

Ser Gly Asn Leu Ala Thr Glu Asp Leu Val Tyr Met Leu Glu Gly Leu  
275 280 285

Gly Ile His Thr Gly Val Asn Leu Gln Lys Leu Leu Glu Ala Gly Asn  
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Phe Ile Cys Gln Ala Leu Asn Arg Lys Thr Ser Ser Lys Val Ala Gln  
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Ala Thr Cys Lys Leu  
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<210> 34  
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<212> PRT  
<213> Mus musculus

<400> 34

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Arg Arg Ser Ser Ser Ala Pro Val Ala Ser Pro Asn Val Arg Arg Leu  
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Glu Tyr Lys Pro Ile Lys Lys Val Met Val Ala Asn Arg Gly Glu Ile  
35 40 45

Ala Ile Arg Val Phe Arg Ala Cys Thr Glu Leu Gly Ile Arg Thr Val  
50 55 60

Ala Val Tyr Ser Glu Gln Asp Thr Gly Gln Met His Arg Gln Lys Ala  
65 70 75 80

Asp Glu Ala Tyr Leu Ile Gly Arg Gly Leu Ala Pro Val Gln Ala Tyr  
85 90 95

Leu His Ile Pro Asp Ile Ile Lys Val Ala Lys Glu Asn Gly Val Asp  
100 105 110

Ala Val His Pro Gly Tyr Gly Phe Leu Ser Glu Arg Ala Asp Phe Ala  
115 120 125

Gln Ala Cys Gln Asp Ala Gly Val Arg Phe Ile Gly Pro Ser Pro Glu  
130 135 140



Val Val Arg Lys Met Gly Asp Lys Val Glu Ala Arg Ala Ile Ala Ile  
 145 150 155 160  
 Ala Ala Gly Val Pro Val Val Pro Gly Thr Asp Ser Pro Ile Ser Ser  
 165 170 175  
 Leu His Glu Ala His Glu Phe Ser Asn Thr Phe Gly Phe Pro Ile Ile  
 180 185 190  
 Phe Lys Ala Ala Tyr Gly Gly Gly Gly Arg Gly Met Arg Val Val His  
 195 200 205  
 Ser Tyr Glu Glu Leu Glu Glu Asn Tyr Thr Arg Ala Tyr Ser Glu Ala  
 210 215 220  
 Leu Ala Ala Phe Gly Asn Gly Ala Leu Phe Val Glu Lys Phe Ile Glu  
 225 230 235 240  
 Lys Pro Arg His Ile Glu Val Gln Ile Leu Gly Asp Gln Tyr Gly Asn  
 245 250 255  
 Ile Leu His Leu Tyr Glu Arg Asp Cys Ser Ile Gln Arg Arg His Gln  
 260 265 270  
 Lys Val Val Glu Ile Ala Pro Ala Thr His Leu Asp Pro Gln Leu Arg  
 275 280 285  
 Ser Arg Leu Thr Ser Asp Ser Val Lys Leu Ala Lys Gln Val Gly Tyr  
 290 295 300  
 Glu Asn Ala Gly Thr Val Glu Phe Leu Val Asp Lys His Gly Lys His  
 305 310 315 320  
 Tyr Phe Ile Glu Val Asn Ser Arg Leu Gln Val Glu His Thr Val Thr  
 325 330 335  
 Glu Glu Ile Thr Asp Val Asp Leu Val His Ala Gln Ile His Val Ser  
 340 345 350  
 Glu Gly Arg Ser Leu Pro Asp Leu Gly Leu Arg Gln Glu Asn Ile Arg  
 355 360 365  
 Ile Asn Gly Cys Ala Ile Gln Cys Arg Val Thr Thr Glu Asp Pro Ala  
 370 375 380  
 Arg Ser Phe Gln Pro Asp Thr Gly Arg Ile Glu Val Phe Arg Ser Gly  
 385 390 395 400

Glu Gly Met Gly Ile Arg Leu Asp Asn Ala Ser Ala Phe Gln Gly Ala  
 405 410 415  
 Val Ile Ser Pro His Tyr Asp Ser Leu Leu Val Lys Val Ile Ala His  
 420 425 430  
 Gly Lys Asp His Pro Thr Ala Ala Thr Lys Met Ser Arg Ala Leu Ala  
 435 440 445  
 Glu Phe Arg Val Arg Gly Val Lys Thr Asn Ile Pro Phe Leu Gln Asn  
 450 455 460  
 Val Leu Asn Asn Gln Gln Phe Leu Ala Gly Thr Val Asp Thr Gln Phe  
 465 470 475 480  
 Ile Asp Glu Asn Pro Glu Leu Phe Gln Leu Arg Pro Ala Gln Asn Arg  
 485 490 495  
 Ala Gln Lys Leu Leu His Tyr Leu Gly His Val Met Val Asn Gly Pro  
 500 505 510  
 Thr Thr Pro Ile Pro Val Asn Val Ser Pro Ser Pro Val Asp Pro Ala  
 515 520 525  
 Val Pro Val Val Pro Ile Gly Pro Pro Pro Ala Gly Phe Arg Asp Ile  
 530 535 540  
 Leu Leu Arg Glu Gly Pro Glu Gly Phe Ala Arg Ala Val Arg Asn His  
 545 550 555 560  
 Gln Gly Leu Leu Leu Met Asp Thr Thr Phe Arg Asp Ala His Gln Ser  
 565 570 575  
 Leu Leu Ala Thr Arg Val Arg Thr His Asp Leu Lys Lys Ile Ala Pro  
 580 585 590  
 Tyr Val Ala His Asn Phe Asn Lys Leu Phe Ser Met Glu Asn Trp Gly  
 595 600 605  
 Gly Ala Thr Phe Asp Val Ala Met Arg Phe Leu Tyr Glu Cys Pro Trp  
 610 615 620  
 Arg Arg Leu Gln Glu Leu Arg Glu Leu Ile Pro Asn Ile Pro Phe Gln  
 625 630 635 640  
 Met Leu Leu Arg Gly Ala Asn Ala Val Gly Tyr Thr Asn Tyr Pro Asp  
 645 650 655

Asn Val Val Phe Lys Phe Cys Glu Val Ala Lys Glu Asn Gly Met Asp  
 660 665 670  
 Val Phe Arg Val Phe Asp Ser Leu Asn Tyr Leu Pro Asn Met Leu Leu  
 675 680 685  
 Gly Met Glu Ala Ala Gly Ser Ala Gly Gly Val Val Glu Ala Ala Ile  
 690 695 700  
 Ser Tyr Thr Gly Asp Val Ala Asp Pro Ser Arg Thr Lys Tyr Ser Leu  
 705 710 715 720  
 Glu Tyr Tyr Met Gly Leu Ala Glu Glu Leu Val Arg Ala Gly Thr His  
 725 730 735  
 Ile Leu Cys Ile Lys Asp Met Ala Gly Leu Leu Lys Pro Ala Ala Cys  
 740 745 750  
 Thr Met Leu Val Ser Ser Leu Arg Asp Arg Phe Pro Asp Leu Pro Leu  
 755 760 765  
 His Ile His Thr His Asp Thr Ser Gly Ala Gly Val Ala Ala Met Leu  
 770 775 780  
 Ala Cys Ala Gln Ala Gly Ala Asp Val Val Asp Val Ala Val Asp Ser  
 785 790 795 800  
 Met Ser Gly Met Thr Ser Gln Pro Ser Met Gly Ala Leu Val Ala Cys  
 805 810 815  
 Thr Lys Gly Thr Pro Leu Asp Thr Glu Val Pro Leu Glu Arg Val Phe  
 820 825 830  
 Asp Tyr Ser Glu Tyr Trp Glu Gly Ala Arg Gly Leu Tyr Ala Ala Phe  
 835 840 845  
 Asp Cys Thr Ala Thr Met Lys Ser Gly Asn Ser Asp Val Tyr Glu Asn  
 850 855 860  
 Glu Ile Pro Gly Gly Gln Tyr Thr Asn Leu His Phe Gln Ala His Ser  
 865 870 875 880  
 Met Gly Leu Gly Ser Lys Phe Lys Glu Val Lys Lys Ala Tyr Val Glu  
 885 890 895  
 Ala Asn Gln Met Leu Gly Asp Leu Ile Lys Val Thr Pro Ser Ser Lys  
 900 905 910

Ile Val Gly Asp Leu Ala Gln Phe Met Val Gln Asn Gly Leu Ser Arg  
915 920 925

Ala Glu Ala Glu Ala Gln Ala Glu Glu Leu Ser Phe Pro Arg Ser Val  
930 935 940

Val Glu Phe Leu Gln Gly Tyr Ile Gly Ile Pro His Gly Gly Phe Pro  
945 950 955 960

Glu Pro Phe Arg Ser Lys Val Leu Lys Asp Leu Pro Arg Ile Glu Gly  
965 970 975

Arg Pro Gly Ala Ser Leu Pro Pro Leu Asn Leu Lys Glu Leu Glu Lys  
980 985 990

Asp Leu Ile Asp Arg His Gly Glu Glu Val Thr Pro Glu Asp Val Leu  
995 1000 1005

Ser Ala Ala Met Tyr Pro Asp Val Phe Ala Gln Phe Lys Asp Phe  
1010 1015 1020

Thr Ala Thr Phe Gly Pro Leu Asp Ser Leu Asn Thr Arg Leu Phe  
1025 1030 1035

Leu Gln Gly Pro Lys Ile Ala Glu Glu Phe Glu Val Glu Leu Glu  
1040 1045 1050

Arg Gly Lys Thr Leu His Ile Lys Ala Leu Ala Val Ser Asp Leu  
1055 1060 1065

Asn Arg Ala Gly Gln Arg Gln Val Phe Phe Glu Leu Asn Gly Gln  
1070 1075 1080

Leu Arg Ser Ile Leu Val Lys Asp Thr Gln Ala Met Lys Glu Met  
1085 1090 1095

His Phe His Pro Lys Ala Leu Lys Asp Val Lys Gly Gln Ile Gly  
1100 1105 1110

Ala Pro Met Pro Gly Lys Val Ile Asp Ile Lys Val Ala Ala Gly  
1115 1120 1125

Asp Lys Val Ala Lys Gly Gln Pro Leu Cys Val Leu Ser Ala Met  
1130 1135 1140

Lys Met Glu Thr Val Val Thr Ser Pro Met Glu Gly Thr Ile Arg  
1145 1150 1155

Lys Val His Val Thr Lys Asp Met Thr Leu Glu Gly Asp Asp Leu  
 1160 1165 1170

Ile Leu Glu Ile Glu  
 1175

<210> 35  
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 <213> Homo sapiens

<400> 35

Met Ala Ala Ala Leu Arg Val Ala Ala Val Gly Ala Arg Leu Ser Val  
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Leu Ala Ser Gly Leu Arg Ala Ala Val Arg Ser Leu Cys Ser Gln Ala  
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Thr Ser Val Asn Glu Arg Ile Glu Asn Lys Arg Arg Thr Ala Leu Leu  
 35 40 45

Gly Gly Gly Gln Arg Arg Ile Asp Ala Gln His Lys Arg Gly Lys Leu  
 50 55 60

Thr Ala Arg Glu Arg Ile Ser Leu Leu Leu Asp Pro Gly Ser Phe Val  
 65 70 75 80

Glu Ser Asp Met Phe Val Glu His Arg Cys Ala Asp Phe Gly Met Ala  
 85 90 95

Ala Asp Lys Asn Lys Phe Pro Gly Asp Ser Val Val Thr Gly Arg Gly  
 100 105 110

Arg Ile Asn Gly Arg Leu Val Tyr Val Phe Ser Gln Asp Phe Thr Val  
 115 120 125

Phe Gly Gly Ser Leu Ser Gly Ala His Ala Gln Lys Ile Cys Lys Ile  
 130 135 140

Met Asp Gln Ala Ile Thr Val Gly Ala Pro Val Ile Gly Leu Asn Asp  
 145 150 155 160

Ser Gly Gly Ala Arg Ile Gln Glu Gly Val Glu Ser Leu Ala Gly Tyr  
 165 170 175

Ala Asp Ile Phe Leu Arg Asn Val Thr Ala Ser Gly Val Ile Pro Gln  
 180 185 190

Ile Ser Leu<sub>195</sub> Ile Met Gly Pro Cys<sub>200</sub> Ala Gly Gly Ala Val<sub>205</sub> Tyr Ser Pro  
 Ala Leu<sub>210</sub> Thr Asp Phe Thr Phe<sub>215</sub> Met Val Lys Asp Thr<sub>220</sub> Ser Tyr Leu Phe  
 Ile Thr Gly Pro Asp Val<sub>230</sub> Val Lys Ser Val Thr<sub>235</sub> Asn Glu Asp Val Thr<sub>240</sub>  
 Gln Glu Glu Leu Gly<sub>245</sub> Gly Ala Lys Thr His<sub>250</sub> Thr Thr Met Ser Gly<sub>255</sub> Val  
 Ala His Arg Ala<sub>260</sub> Phe Glu Asn Asp Val<sub>265</sub> Asp Ala Leu Cys Asn<sub>270</sub> Leu Arg  
 Asp Phe Phe<sub>275</sub> Asn Tyr Leu Pro Leu<sub>280</sub> Ser Ser Gln Asp Pro<sub>285</sub> Ala Pro Val  
 Arg Glu<sub>290</sub> Cys His Asp Pro Ser<sub>295</sub> Asp Arg Leu Val Pro<sub>300</sub> Glu Leu Asp Thr  
 Ile Val Pro Leu Glu Ser<sub>310</sub> Thr Lys Ala Tyr Asn<sub>315</sub> Met Val Asp Ile Ile<sub>320</sub>  
 His Ser Val Val Asp<sub>325</sub> Glu Arg Glu Phe Phe<sub>330</sub> Glu Ile Met Pro Asn<sub>335</sub> Tyr  
 Ala Lys Asn Ile<sub>340</sub> Ile Val Gly Phe Ala<sub>345</sub> Arg Met Asn Gly Arg<sub>350</sub> Thr Val  
 Gly Ile Val<sub>355</sub> Gly Asn Gln Pro Lys<sub>360</sub> Val Ala Ser Gly Cys<sub>365</sub> Leu Asp Ile  
 Asn Ser Ser Val Lys Gly Ala<sub>375</sub> Arg Phe Val Arg Phe<sub>380</sub> Cys Asp Ala Phe  
 Asn Ile Pro Leu Ile Thr<sub>390</sub> Phe Val Asp Val Pro<sub>395</sub> Gly Phe Leu Pro Gly<sub>400</sub>  
 Thr Ala Gln Glu Tyr<sub>405</sub> Gly Gly Ile Ile Arg<sub>410</sub> His Gly Ala Lys Leu<sub>415</sub> Leu  
 Tyr Ala Phe Ala<sub>420</sub> Glu Ala Thr Val Pro<sub>425</sub> Lys Val Thr Val Ile<sub>430</sub> Thr Arg  
 Lys Ala Tyr<sub>435</sub> Gly Gly Ala Tyr Asp<sub>440</sub> Val Met Ser Ser Lys<sub>445</sub> His Leu Cys

Gly Asp Thr Asn Tyr Ala Trp Pro Thr Ala Glu Ile Ala Val Met Gly  
450 455 460

Ala Lys Gly Ala Val Glu Ile Ile Phe Lys Gly His Glu Asn Val Glu  
465 470 475 480

Ala Ala Gln Ala Glu Tyr Ile Glu Lys Phe Ala Asn Pro Phe Pro Ala  
485 490 495

Ala Val Arg Gly Phe Val Asp Asp Ile Ile Gln Pro Ser Ser Thr Arg  
500 505 510

Ala Arg Ile Cys Cys Asp Leu Asp Val Leu Ala Ser Lys Lys Val Gln  
515 520 525

Arg Pro Trp Arg Lys His Ala Asn Ile Pro Leu  
530 535

<210> 36  
<211> 558  
<212> PRT  
<213> Homo sapiens

<400> 36

Met Tyr Arg Tyr Leu Ala Lys Ala Leu Leu Pro Ser Arg Ala Gly Pro  
1 5 10 15

Ala Ala Leu Gly Ser Ala Ala Asn His Ser Ala Ala Leu Leu Gly Arg  
20 25 30

Gly Arg Gly Gln Pro Ala Ala Ala Ser Gln Pro Gly Leu Ala Leu Ala  
35 40 45

Ala Arg Arg His Tyr Ser Glu Leu Val Ala Asp Arg Glu Asp Asp Pro  
50 55 60

Asn Phe Phe Lys Met Val Glu Gly Phe Phe Asp Arg Gly Ala Ser Ile  
65 70 75 80

Val Glu Asp Lys Leu Val Lys Asp Leu Arg Thr Gln Glu Ser Glu Glu  
85 90 95

Gln Lys Arg Asn Arg Val Arg Gly Ile Leu Arg Ile Ile Lys Pro Cys  
100 105 110

Asn His Val Leu Ser Leu Ser Phe Pro Ile Arg Arg Asp Asp Gly Ser  
115 120 125

Trp Glu Val Ile Glu Gly Tyr Arg Ala Gln His Ser Gln His Arg Thr  
 130 135 140  
 Pro Cys Lys Gly Gly Ile Arg Tyr Ser Thr Asp Val Ser Val Asp Glu  
 145 150 155 160  
 Val Lys Ala Leu Ala Ser Leu Met Thr Tyr Lys Cys Ala Val Val Asp  
 165 170 175  
 Val Pro Phe Gly Gly Ala Lys Ala Gly Val Lys Ile Asn Pro Lys Asn  
 180 185 190  
 Tyr Thr Glu Asn Glu Leu Glu Lys Ile Thr Arg Arg Phe Thr Met Glu  
 195 200 205  
 Leu Ala Lys Lys Gly Phe Ile Gly Pro Gly Val Asp Val Pro Ala Pro  
 210 215 220  
 Asp Met Asn Thr Gly Glu Arg Glu Met Ser Trp Ile Ala Asp Thr Tyr  
 225 230 235 240  
 Ala Ser Thr Ile Gly His Tyr Asp Ile Asn Ala His Ala Cys Val Thr  
 245 250 255  
 Gly Lys Pro Ile Ser Gln Gly Gly Ile His Gly Arg Ile Ser Ala Thr  
 260 265 270  
 Gly Arg Gly Val Phe His Gly Ile Glu Asn Phe Ile Asn Glu Ala Ser  
 275 280 285  
 Tyr Met Ser Ile Leu Gly Met Thr Pro Gly Phe Arg Asp Lys Thr Phe  
 290 295 300  
 Val Val Gln Gly Phe Gly Asn Val Gly Leu His Ser Met Arg Tyr Leu  
 305 310 315 320  
 His Arg Phe Gly Ala Lys Cys Ile Ala Val Gly Glu Ser Asp Gly Ser  
 325 330 335  
 Ile Trp Asn Pro Asp Gly Ile Asp Pro Lys Glu Leu Glu Asp Phe Lys  
 340 345 350  
 Leu Gln His Gly Ser Ile Leu Gly Phe Pro Lys Ala Lys Pro Tyr Glu  
 355 360 365  
 Gly Ser Ile Leu Glu Val Asp Cys Asp Ile Leu Ile Pro Ala Ala Thr  
 370 375 380



Glu Lys Gln Leu Thr Lys Ser Asn Ala Pro Arg Val Lys Ala Lys Ile  
385 390 395 400

Ile Ala Glu Gly Ala Asn Gly Pro Thr Thr Pro Glu Ala Asp Lys Ile  
405 410 415

Phe Leu Glu Arg Asn Ile Leu Val Ile Pro Asp Leu Tyr Leu Asn Ala  
420 425 430

Gly Gly Val Thr Val Ser Tyr Phe Glu Trp Leu Lys Asn Leu Asn His  
435 440 445

Val Ser Tyr Gly Arg Leu Thr Phe Lys Tyr Glu Arg Asp Ser Asn Tyr  
450 455 460

His Leu Leu Leu Ser Val Gln Glu Ser Leu Glu Arg Lys Phe Gly Lys  
465 470 475 480

His Gly Gly Thr Ile Pro Ile Val Pro Thr Ala Glu Phe Gln Asp Ser  
485 490 495

Ile Ser Gly Ala Ser Glu Lys Asp Ile Val His Ser Ala Leu Ala Tyr  
500 505 510

Thr Met Glu Arg Ser Ala Arg Gln Ile Met His Thr Ala Met Lys Tyr  
515 520 525

Asn Leu Gly Leu Asp Leu Arg Thr Ala Ala Tyr Val Asn Ala Ile Glu  
530 535 540

Lys Val Phe Lys Val Tyr Ser Glu Ala Gly Val Thr Phe Thr  
545 550 555

<210> 37  
<211> 102  
<212> PRT  
<213> Mus musculus

<400> 37

Met Ala Gly Gln Ala Phe Arg Lys Phe Leu Pro Leu Phe Asp Arg Val  
1 5 10 15

Leu Val Glu Arg Ser Ala Ala Glu Thr Val Thr Lys Gly Gly Ile Met  
20 25 30

Leu Pro Glu Lys Ser Gln Gly Lys Val Leu Gln Ala Thr Val Val Ala  
35 40 45

Val Gly Ser Gly Gly Lys Gly Lys Ser Gly Glu Ile Glu Pro Val Ser  
Page 77

50

55

60

Val Lys Val Gly Asp Lys Val Leu Leu Pro Glu Tyr Gly Gly Thr Lys  
65 70 75 80

Val Val Leu Asp Asp Lys Asp Tyr Phe Leu Phe Arg Asp Ser Asp Ile  
85 90 95

Leu Gly Lys Tyr Val Asp  
100

<210> 38  
<211> 432  
<212> PRT  
<213> Homo sapiens

<400> 38

Met Glu Gly Leu Ala Val Arg Leu Leu Arg Gly Ser Arg Leu Leu Arg  
1 5 10 15

Arg Asn Phe Leu Thr Cys Leu Ser Ser Trp Lys Ile Pro Pro His Val  
20 25 30

Ser Lys Ser Ser Gln Ser Glu Ala Leu Leu Asn Ile Thr Asn Asn Gly  
35 40 45

Ile His Phe Ala Pro Leu Gln Thr Phe Thr Asp Glu Glu Met Met Ile  
50 55 60

Lys Ser Ser Val Lys Lys Phe Ala Gln Glu Gln Ile Ala Pro Leu Val  
65 70 75 80

Ser Thr Met Asp Glu Asn Ser Lys Met Glu Lys Ser Val Ile Gln Gly  
85 90 95

Leu Phe Gln Gln Gly Leu Met Gly Ile Glu Val Asp Pro Glu Tyr Gly  
100 105 110

Gly Thr Gly Ala Ser Phe Leu Ser Thr Val Leu Val Ile Glu Glu Leu  
115 120 125

Ala Lys Val Asp Ala Ser Val Ala Val Phe Cys Glu Ile Gln Asn Thr  
130 135 140

Leu Ile Asn Thr Leu Ile Arg Lys His Gly Thr Glu Glu Gln Lys Ala  
145 150 155 160

Thr Tyr Leu Pro Gln Leu Thr Thr Glu Lys Val Gly Ser Phe Cys Leu  
165 170 175

Ser Glu Ala Gly Ala Gly Ser Asp Ser Phe Ala Leu Lys Thr Arg Ala  
 180 185 190  
 Asp Lys Glu Gly Asp Tyr Tyr Val Leu Asn Gly Ser Lys Met Trp Ile  
 195 200 205  
 Ser Ser Ala Glu His Ala Gly Leu Phe Leu Val Met Ala Asn Val Asp  
 210 215 220  
 Pro Thr Ile Gly Tyr Lys Gly Ile Thr Ser Phe Leu Val Asp Arg Asp  
 225 230 235 240  
 Thr Pro Gly Leu His Ile Gly Lys Pro Glu Asn Lys Leu Gly Leu Arg  
 245 250 255  
 Ala Ser Ser Thr Cys Pro Leu Thr Phe Glu Asn Val Lys Val Pro Glu  
 260 265 270  
 Ala Asn Ile Leu Gly Gln Ile Gly His Gly Tyr Lys Tyr Ala Ile Gly  
 275 280 285  
 Ser Leu Asn Glu Gly Arg Ile Gly Ile Ala Ala Gln Met Leu Gly Leu  
 290 295 300  
 Ala Gln Gly Cys Phe Asp Tyr Thr Ile Pro Tyr Ile Lys Glu Arg Ile  
 305 310 315 320  
 Gln Phe Gly Lys Arg Leu Phe Asp Phe Gln Gly Leu Gln His Gln Val  
 325 330 335  
 Ala His Val Ala Thr Gln Leu Glu Ala Ala Arg Leu Leu Thr Tyr Asn  
 340 345 350  
 Ala Ala Arg Leu Leu Glu Ala Gly Lys Pro Phe Ile Lys Glu Ala Ser  
 355 360 365  
 Met Ala Lys Tyr Tyr Ala Ser Glu Ile Ala Gly Gln Thr Thr Ser Lys  
 370 375 380  
 Cys Ile Glu Trp Met Gly Gly Val Gly Tyr Thr Lys Asp Tyr Pro Val  
 385 390 395 400  
 Glu Lys Tyr Phe Arg Asp Ala Lys Ile Gly Thr Ile Tyr Glu Gly Ala  
 405 410 415  
 Ser Asn Ile Gln Leu Asn Thr Ile Ala Lys His Ile Asp Ala Glu Tyr  
 420 425 430

<210> 39  
 <211> 302  
 <212> PRT  
 <213> Homo sapiens

<400> 39

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Met Ala Leu Val Ala Ser Val Arg Val Pro Ala Arg Val Leu Leu Arg
1      5      10     15
Ala Gly Ala Arg Leu Pro Gly Ala Ala Leu Gly Arg Thr Glu Arg Ala
      20     25     30
Ala Gly Gly Gly Asp Gly Ala Arg Arg Phe Gly Ser Gln Arg Val Leu
      35     40     45
Val Glu Pro Asp Ala Gly Ala Gly Val Ala Val Met Lys Phe Lys Asn
      50     55     60
Pro Pro Val Asn Ser Leu Ser Leu Glu Phe Leu Thr Glu Leu Val Ile
65      70      75      80
Ser Leu Glu Lys Leu Glu Asn Asp Lys Ser Phe Arg Gly Val Ile Leu
      85     90     95
Thr Ser Asp Arg Pro Gly Val Phe Ser Ala Gly Leu Asp Leu Thr Glu
      100    105    110
Met Cys Gly Arg Ser Pro Ala His Tyr Ala Gly Tyr Trp Lys Ala Val
      115    120    125
Gln Glu Leu Trp Leu Arg Leu Tyr Gln Ser Asn Leu Val Leu Val Ser
      130    135    140
Ala Ile Asn Gly Ala Cys Pro Ala Gly Gly Cys Leu Val Ala Leu Thr
145      150    155
Cys Asp Tyr Arg Ile Leu Ala Asp Asn Pro Arg Tyr Cys Ile Gly Leu
      165    170    175
Asn Glu Thr Gln Leu Gly Ile Ile Ala Pro Phe Trp Leu Lys Asp Thr
      180    185    190
Leu Glu Asn Thr Ile Gly His Arg Ala Ala Glu Arg Ala Leu Gln Leu
      195    200    205
Gly Leu Leu Phe Pro Pro Ala Glu Ala Leu Gln Val Gly Ile Val Asp
210      215    220

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Gln Val Val Pro Glu Glu Gln Val Gln Ser Thr Ala Leu Ser Ala Ile  
 225 230 235 240

Ala Gln Trp Met Ala Ile Pro Asp His Ala Arg Gln Leu Thr Lys Ala  
 245 250 255

Met Met Arg Lys Ala Thr Ala Ser Arg Leu Val Thr Gln Arg Asp Ala  
 260 265 270

Asp Val Gln Asn Phe Val Ser Phe Ile Ser Lys Asp Ser Ile Gln Lys  
 275 280 285

Ser Leu Gln Met Tyr Leu Glu Arg Leu Lys Glu Glu Lys Gly  
 290 295 300

<210> 40  
 <211> 421  
 <212> PRT  
 <213> Mus musculus

<400> 40

Met Ala Ala Ala Phe Arg Arg Gly Cys Arg Val Leu Arg Ser Val Ser  
 1 5 10 15

His Phe Glu Cys Arg Thr Gln His Ser Lys Ala Ala His Lys Gln Glu  
 20 25 30

Pro Gly Leu Gly Phe Ser Phe Glu Leu Thr Glu Gln Gln Lys Glu Phe  
 35 40 45

Gln Ala Thr Ala Arg Lys Phe Ala Arg Glu Glu Ile Ile Pro Val Ala  
 50 55 60

Pro Glu Tyr Asp Lys Ser Gly Glu Tyr Pro Phe Pro Leu Ile Lys Arg  
 65 70 75 80

Ala Trp Glu Leu Gly Leu Ile Asn Ala His Ile Pro Glu Ser Cys Gly  
 85 90 95

Gly Leu Gly Leu Gly Thr Phe Asp Ala Cys Leu Ile Thr Glu Glu Leu  
 100 105 110

Ala Tyr Gly Cys Thr Gly Val Gln Thr Ala Ile Glu Ala Asn Ser Leu  
 115 120 125

Gly Gln Met Pro Val Ile Leu Ala Gly Asn Asp Gln Gln Lys Lys Lys  
 130 135 140

Tyr Leu Gly Arg Met Thr Glu Gln Pro Met Met Cys Ala Tyr Cys Val  
 145 150 155 160  
 Thr Glu Pro Ser Ala Gly Ser Asp Val Ala Ala Ile Lys Thr Lys Ala  
 165 170 175  
 Glu Lys Lys Gly Asp Glu Tyr Val Ile Asn Gly Gln Lys Met Trp Ile  
 180 185 190  
 Thr Asn Gly Gly Lys Ala Asn Trp Tyr Phe Leu Leu Ala Arg Ser Asn  
 195 200 205  
 Pro Asp Pro Lys Val Pro Ala Ser Lys Ala Phe Thr Gly Phe Ile Val  
 210 215 220  
 Glu Ala Asp Thr Pro Gly Ile His Ile Gly Lys Lys Glu Leu Asn Met  
 225 230 235 240  
 Gly Gln Arg Cys Ser Asp Thr Arg Gly Ile Ala Phe Glu Asp Val Arg  
 245 250 255  
 Val Pro Lys Glu Asn Val Leu Ile Gly Glu Gly Ala Gly Phe Lys Ile  
 260 265 270  
 Ala Met Gly Ala Phe Asp Arg Thr Arg Pro Thr Val Ala Ala Gly Ala  
 275 280 285  
 Val Gly Leu Ala Gln Arg Ala Leu Asp Glu Ala Thr Lys Tyr Ala Leu  
 290 295 300  
 Asp Arg Lys Thr Phe Gly Lys Leu Leu Val Glu His Gln Gly Val Ser  
 305 310 315 320  
 Phe Leu Leu Ala Glu Met Ala Met Lys Val Glu Leu Ala Arg Leu Ser  
 325 330 335  
 Tyr Gln Arg Ala Ala Trp Glu Val Asp Ser Gly Arg Arg Asn Thr Tyr  
 340 345 350  
 Tyr Ala Ser Ile Ala Lys Ala Phe Ala Gly Asp Ile Ala Asn Gln Leu  
 355 360 365  
 Ala Thr Asp Ala Val Gln Ile Phe Gly Gly Tyr Gly Phe Asn Thr Glu  
 370 375 380  
 Tyr Pro Val Glu Lys Leu Met Arg Asp Ala Lys Ile Tyr Gln Ile Tyr  
 385 390 395 400

Glu Gly Thr Ala Gln Ile Gln Arg Leu Ile Ile Ala Arg Glu His Ile  
405 410 415

Glu Lys Tyr Lys Asn  
420

<210> 41  
<211> 429  
<212> DNA  
<213> Homo sapiens

<400> 41  
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tccagaaaga cagcaagaag cgagtatttt ccggcattca acctacagga atcctccacc 120  
tgggcaatta cctgggagcc attgagagct ggggtgaggtt acaggatgaa tatgactctg 180  
tattatacag cattgttgac ctccactcca ttactgtccc ccaagaccca gctgtccttc 240  
ggcagacatc ctggacatga ctgctgttct tcttgctgtg ggataaaccc ggaaaaaagc 300  
atccttttcc aacaatctca ggtgtctgaa cacacacaat taagttggat cctttcctgc 360  
atggtcagac tacctcgatt acaacattta catcagtgga aggcaaagac taccaagcag 420  
aagcacgat 429

<210> 42  
<211> 518  
<212> PRT  
<213> Homo sapiens

<400> 42

Met Ala Ala Ser Met Ala Arg Arg Leu Trp Pro Leu Leu Thr Arg Arg  
1 5 10 15

Gly Phe Arg Pro Arg Gly Gly Cys Ile Ser Asn Asp Ser Pro Arg Arg  
20 25 30

Ser Phe Thr Thr Glu Lys Arg Asn Arg Asn Leu Leu Tyr Glu Tyr Ala  
35 40 45

Arg Glu Gly Tyr Ser Ala Leu Pro Gln Leu Asp Ile Glu Arg Phe Cys  
50 55 60

Ala Cys Pro Glu Glu Ala Ala His Ala Leu Glu Leu Arg Lys Gly Glu  
65 70 75 80

Leu Arg Ser Ala Asp Leu Pro Ala Ile Ile Ser Thr Trp Gln Glu Leu  
85 90 95

Arg Gln Leu Gln Glu Gln Ile Arg Ser Leu Glu Glu Glu Lys Ala Ala  
100 105 110

Val Thr Glu Ala Val Arg Ala Leu Leu Ala Asn Gln Asp Ser Gly Glu  
 115 120 125  
 Val Gln Gln Asp Pro Lys Tyr Gln Gly Leu Arg Ala Arg Gly Arg Glu  
 130 135 140  
 Ile Arg Lys Glu Leu Val His Leu Tyr Pro Arg Glu Ala Gln Leu Glu  
 145 150 155 160  
 Glu Gln Phe Tyr Leu Gln Ala Leu Lys Leu Pro Asn Gln Thr His Pro  
 165 170 175  
 Asp Val Pro Val Gly Asp Glu Ser Gln Ala Arg Val Leu His Met Val  
 180 185 190  
 Gly Asp Lys Pro Val Phe Ser Phe Gln Pro Arg Gly His Leu Glu Ile  
 195 200 205  
 Gly Glu Lys Leu Asp Ile Ile Arg Gln Lys Arg Leu Ser His Val Ser  
 210 215 220  
 Gly His Arg Ser Tyr Tyr Leu Arg Gly Ala Gly Ala Leu Leu Gln His  
 225 230 235 240  
 Gly Leu Val Asn Phe Thr Phe Asn Lys Leu Leu Arg Arg Gly Phe Thr  
 245 250 255  
 Pro Met Thr Val Pro Asp Leu Leu Arg Gly Ala Val Phe Glu Gly Cys  
 260 265 270  
 Gly Met Thr Pro Asn Ala Asn Pro Ser Gln Ile Tyr Asn Ile Asp Pro  
 275 280 285  
 Ala Arg Phe Lys Asp Leu Asn Leu Ala Gly Thr Ala Glu Val Gly Leu  
 290 295 300  
 Ala Gly Tyr Phe Met Asp His Thr Val Ala Phe Arg Asp Leu Pro Val  
 305 310 315 320  
 Arg Met Val Cys Ser Ser Thr Cys Tyr Arg Ala Glu Thr Asn Thr Gly  
 325 330 335  
 Gln Glu Pro Arg Gly Leu Tyr Arg Val His His Phe Thr Lys Val Glu  
 340 345 350  
 Met Phe Gly Val Thr Gly Pro Gly Leu Glu Gln Ser Ser Gln Leu Leu  
 355 360 365



Glu Glu Phe Leu Ser Leu Gln Met Glu Ile Leu Thr Glu Leu Gly Leu  
370 375 380

His Phe Arg Val Leu Asp Met Pro Thr Gln Glu Leu Gly Leu Pro Ala  
385 390 395 400

Tyr Arg Lys Phe Asp Ile Glu Ala Trp Met Pro Gly Arg Gly Arg Phe  
405 410 415

Gly Glu Val Thr Ser Ala Ser Asn Cys Thr Asp Phe Gln Ser Arg Arg  
420 425 430

Leu His Ile Met Phe Gln Thr Glu Ala Gly Glu Leu Gln Phe Ala His  
435 440 445

Thr Val Asn Ala Thr Ala Cys Ala Val Pro Arg Leu Leu Ile Ala Leu  
450 455 460

Leu Glu Ser Asn Gln Gln Lys Asp Gly Ser Val Leu Val Pro Pro Ala  
465 470 475 480

Leu Gln Ser Tyr Leu Gly Thr Asp Arg Ile Thr Ala Pro Thr His Val  
485 490 495

Pro Leu Gln Tyr Ile Gly Pro Asn Gln Pro Arg Lys Pro Gly Leu Pro  
500 505 510

Gly Gln Pro Ala Val Ser  
515

<210> 43  
<211> 430  
<212> PRT  
<213> Mus musculus

<400> 43

Met Ala Ala Arg Leu Leu Leu Arg Ser Leu Arg Val Leu Lys Ala Arg  
1 5 10 15

Ser Ala Pro Arg Pro Pro Pro Ser Ala Arg Cys Ser His Ser Gly Ala  
20 25 30

Glu Ala Arg Leu Glu Thr Pro Ser Ala Lys Lys Leu Thr Asp Val Gly  
35 40 45

Ile Arg Arg Ile Phe Ser Ser Glu His Asp Ile Phe Arg Glu Ser Val  
50 55 60

Arg Lys Phe Phe Gln Glu Glu Val Ile Pro His His Thr Glu Trp Glu  
 65 70 75 80  
 Lys Ala Gly Glu Val Ser Arg Glu Val Trp Glu Lys Ala Gly Lys Gln  
 85 90 95  
 Gly Leu Leu Gly Ile Asn Ile Ala Glu Lys His Gly Gly Ile Gly Gly  
 100 105 110  
 Asp Leu Leu Ser Thr Ala Val Thr Trp Glu Glu Gln Ala Tyr Ser Asn  
 115 120 125  
 Cys Thr Gly Pro Gly Phe Ser Leu His Ser Asp Ile Val Met Pro Tyr  
 130 135 140  
 Ile Ala Asn Tyr Gly Thr Lys Glu Gln Ile Glu Lys Phe Ile Pro Gln  
 145 150 155 160  
 Met Thr Ala Gly Lys Cys Ile Gly Ala Ile Ala Met Thr Glu Pro Gly  
 165 170 175  
 Ala Gly Ser Asp Leu Gln Gly Val Arg Thr Asn Ala Lys Arg Ser Gly  
 180 185 190  
 Ser Asp Trp Ile Leu Asn Gly Ser Lys Val Phe Ile Thr Asn Gly Trp  
 195 200 205  
 Leu Ser Asp Leu Val Ile Val Val Ala Val Thr Asn Arg Glu Ala Arg  
 210 215 220  
 Ser Pro Ala His Gly Ile Ser Leu Phe Leu Val Glu Asn Gly Met Lys  
 225 230 235 240  
 Gly Phe Ile Lys Gly Arg Lys Leu His Lys Met Gly Met Lys Ala Gln  
 245 250 255  
 Asp Thr Ala Glu Leu Phe Phe Glu Asp Val Arg Leu Pro Ala Asn Ala  
 260 265 270  
 Leu Leu Gly Glu Glu Asn Lys Gly Phe Tyr Tyr Leu Met Gln Glu Leu  
 275 280 285  
 Pro Gln Glu Arg Leu Leu Ile Ala Glu Leu Ala Ile Ser Ala Cys Glu  
 290 295 300  
 Phe Met Phe Glu Glu Thr Arg Asn Tyr Val Lys Gln Arg Lys Ala Phe  
 305 310 315 320

Gly Lys Thr Val Ala His Ile Gln Thr Val Gln His Lys Leu Ala Glu  
325 330 335

Leu Lys Thr His Ile Cys Val Thr Arg Ala Phe Val Asp Ser Cys Leu  
340 345 350

Gln Leu His Glu Thr Lys Arg Leu Asp Ser Gly Ser Ala Ser Met Ala  
355 360 365

Lys Tyr Trp Ala Ser Glu Leu Gln Asn Ser Val Ala Tyr Glu Cys Val  
370 375 380

Gln Leu His Gly Gly Trp Gly Tyr Met Trp Glu Tyr Pro Ile Ala Lys  
385 390 395 400

Ala Tyr Val Asp Ala Arg Val Gln Pro Ile Tyr Gly Gly Thr Asn Glu  
405 410 415

Ile Met Lys Glu Leu Ile Ala Arg Gln Ile Val Ser Asp Ser  
420 425 430

<210> 44  
<211> 466  
<212> PRT  
<213> Homo sapiens

<400> 44

Met Ala Leu Leu Thr Ala Ala Ala Arg Leu Leu Gly Thr Lys Asn Ala  
1 5 10 15

Ser Cys Leu Val Leu Ala Ala Arg His Ala Ser Ala Ser Ser Thr Asn  
20 25 30

Leu Lys Asp Ile Leu Ala Asp Leu Ile Pro Lys Glu Gln Ala Arg Ile  
35 40 45

Lys Thr Phe Arg Gln Gln His Gly Lys Thr Val Val Gly Gln Ile Thr  
50 55 60

Val Asp Met Met Tyr Gly Gly Met Arg Gly Met Lys Gly Leu Val Tyr  
65 70 75 80

Glu Thr Ser Val Leu Asp Pro Asp Glu Gly Ile Arg Phe Arg Gly Phe  
85 90 95

Ser Ile Pro Glu Cys Gln Lys Leu Leu Pro Lys Ala Lys Gly Gly Glu  
100 105 110

Glu Pro Leu Pro Glu Gly Leu Phe Trp Leu Leu Val Thr Gly Cys Ile  
 115 120 125  
 Pro Thr Glu Glu Gln Val Ser Trp Leu Ser Lys Glu Trp Ala Lys Arg  
 130 135 140  
 Ala Ala Leu Pro Ser His Val Val Thr Met Leu Asp Asn Phe Pro Thr  
 145 150 155 160  
 Asn Leu His Pro Met Ser Gln Leu Ser Ala Ala Val Thr Ala Leu Asn  
 165 170 175  
 Ser Glu Ser Asn Phe Ala Gln Ala Tyr Ala Arg Gly Ile Ser Arg Thr  
 180 185 190  
 Lys Tyr Trp Glu Leu Ile Tyr Glu Asp Ser Val Asp Leu Ile Ala Lys  
 195 200 205  
 Leu Pro Cys Val Ala Ala Lys Ile Tyr Arg Asn Leu Tyr Trp Glu Gly  
 210 215 220  
 Ser Gly Ile Gly Ala Ile Asp Ser Asn Leu Asp Trp Ser His Asn Phe  
 225 230 235 240  
 Thr Asn Met Leu Gly Tyr Thr Asp His Gln Phe Thr Glu Leu Met Arg  
 245 250 255  
 Leu Tyr Leu Thr Ile His Ser Asp His Glu Gly Gly Asn Val Ser Ala  
 260 265 270  
 His Thr Ser His Leu Val Gly Ser Ala Leu Ser Asp Pro Tyr Leu Ser  
 275 280 285  
 Phe Ala Ala Ala Met Asn Gly Leu Ala Gly Pro Leu His Gly Leu Ala  
 290 295 300  
 Asn Gln Glu Val Leu Val Trp Leu Thr Gln Leu Gln Lys Glu Val Gly  
 305 310 315 320  
 Lys Asp Val Ser Asp Glu Lys Leu Arg Asp Tyr Ile Trp Asn Thr Leu  
 325 330 335  
 Asn Ser Gly Arg Val Val Pro Gly Tyr Gly His Ala Val Leu Arg Lys  
 340 345 350  
 Thr Asp Pro Arg Tyr Thr Cys Gln Arg Glu Phe Ala Leu Lys His Leu  
 355 360 365

Pro Asn Asp Pro Met Phe Lys Leu Val Ala Gln Leu Tyr Lys Ile Val  
370 375 380

Pro Asn Val Leu Leu Glu Gln Gly Lys Ala Lys Asn Pro Trp Pro Asn  
385 390 395 400

Val Asp Ala His Ser Gly Val Leu Leu Gln Tyr Tyr Gly Met Thr Glu  
405 410 415

Met Asn Tyr Tyr Thr Val Leu Phe Gly Val Ser Arg Ala Leu Gly Val  
420 425 430

Leu Ala Gln Leu Ile Trp Ser Arg Ala Leu Gly Phe Pro Leu Glu Arg  
435 440 445

Pro Lys Ser Met Ser Thr Glu Gly Leu Met Lys Phe Val Asp Ser Lys  
450 455 460

Ser Gly  
465

<210> 45  
<211> 451  
<212> PRT  
<213> Homo sapiens

<400> 45

Met Val Gly Ser Ala Leu Arg Arg Gly Ala His Ala Tyr Val Tyr Leu  
1 5 10 15

Val Ser Lys Ala Ser His Ile Ser Arg Gly His Gln His Gln Ala Trp  
20 25 30

Gly Ser Arg Pro Pro Ala Ala Glu Cys Ala Thr Gln Arg Ala Pro Gly  
35 40 45

Ser Val Val Glu Leu Leu Gly Lys Ser Tyr Pro Gln Asp Asp His Ser  
50 55 60

Asn Leu Thr Arg Lys Val Leu Thr Arg Val Gly Arg Asn Leu His Asn  
65 70 75 80

Gln Gln His His Pro Leu Trp Leu Ile Lys Glu Arg Val Lys Glu His  
85 90 95

Phe Tyr Lys Gln Tyr Val Gly Arg Phe Gly Thr Pro Leu Phe Ser Val  
100 105 110

Tyr Asp Asn Leu Ser Pro Val Val Thr Thr Trp Gln Asn Phe Asp Ser  
Page 89

115

120

125

Leu Leu Ile Pro Ala Asp His Pro Ser Arg Lys Lys Gly Asp Asn Tyr  
 130 135 140

Tyr Leu Asn Arg Thr His Met Leu Arg Ala His Thr Ser Ala His Gln  
 145 150 155 160

Trp Asp Leu Leu His Ala Gly Leu Asp Ala Phe Leu Val Val Gly Asp  
 165 170 175

Val Tyr Arg Arg Asp Gln Ile Asp Ser Gln His Tyr Pro Ile Phe His  
 180 185 190

Gln Leu Glu Ala Val Arg Leu Phe Ser Lys His Glu Leu Phe Ala Gly  
 195 200 205

Ile Lys Asp Gly Glu Ser Leu Gln Leu Phe Glu Gln Ser Ser Arg Ser  
 210 215 220

Ala His Lys Gln Glu Thr His Thr Met Glu Ala Val Lys Leu Val Glu  
 225 230 235 240

Phe Asp Leu Lys Gln Thr Leu Thr Arg Leu Met Ala His Leu Phe Gly  
 245 250 255

Asp Glu Leu Glu Ile Arg Trp Val Asp Cys Tyr Phe Pro Phe Thr His  
 260 265 270

Pro Ser Phe Glu Met Glu Ile Asn Phe His Gly Glu Trp Leu Glu Val  
 275 280 285

Leu Gly Cys Gly Val Met Glu Gln Gln Leu Val Asn Ser Ala Gly Ala  
 290 295 300

Gln Asp Arg Ile Gly Trp Ala Phe Gly Leu Gly Leu Glu Arg Leu Ala  
 305 310 315 320

Met Ile Leu Tyr Asp Ile Pro Asp Ile Arg Leu Phe Trp Cys Glu Asp  
 325 330 335

Glu Arg Phe Leu Lys Gln Phe Cys Val Ser Asn Ile Asn Gln Lys Val  
 340 345 350

Lys Phe Gln Pro Leu Ser Lys Tyr Pro Ala Val Ile Asn Asp Ile Ser  
 355 360 365

Phe Trp Leu Pro Ser Glu Asn Tyr Ala Glu Asn Asp Phe Tyr Asp Leu  
 Page 90

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375

380

Val Arg Thr Ile Gly Gly Asp Leu Val Glu Lys Val Asp Leu Ile Asp  
385 390 395 400

Lys Phe Val His Pro Lys Thr His Lys Thr Ser His Cys Tyr Arg Ile  
405 410 415

Thr Tyr Arg His Met Glu Arg Thr Leu Ser Gln Arg Glu Val Arg His  
420 425 430

Ile His Gln Ala Leu Gln Glu Ala Ala Val Gln Leu Leu Gly Val Glu  
435 440 445

Gly Arg Phe  
450

<210> 46  
<211> 213  
<212> PRT  
<213> Homo sapiens

<400> 46

Met Ala Ala Pro Ala Val Ser Gly Leu Ser Arg Gln Val Arg Cys Phe  
1 5 10 15

Ser Thr Ser Val Val Arg Pro Phe Ala Lys Leu Val Arg Pro Pro Val  
20 25 30

Gln Val Tyr Gly Ile Glu Gly Arg Tyr Ala Thr Ala Leu Tyr Ser Ala  
35 40 45

Ala Ser Lys Gln Asn Lys Leu Glu Gln Val Glu Lys Glu Leu Leu Arg  
50 55 60

Val Ala Gln Ile Leu Lys Glu Pro Lys Val Ala Ala Ser Val Leu Asn  
65 70 75 80

Pro Tyr Val Lys Arg Ser Ile Lys Val Lys Ser Leu Asn Asp Ile Thr  
85 90 95

Ala Lys Glu Arg Phe Ser Pro Leu Thr Thr Asn Leu Ile Asn Leu Leu  
100 105 110

Ala Glu Asn Gly Arg Leu Ser Asn Thr Gln Gly Val Val Ser Ala Phe  
115 120 125

Ser Thr Met Met Ser Val His Arg Gly Glu Val Pro Cys Thr Val Thr  
130 135 140

Ser Ala Ser Pro Leu Glu Glu Ala Thr Leu Ser Glu Leu Lys Thr Val  
145 150 155 160

Leu Lys Ser Phe Leu Ser Gln Gly Gln Val Leu Lys Leu Glu Ala Lys  
165 170 175

Thr Asp Pro Ser Ile Leu Gly Gly Met Ile Val Arg Ile Gly Glu Lys  
180 185 190

Tyr Val Asp Met Ser Val Lys Thr Lys Ile Gln Lys Leu Gly Arg Ala  
195 200 205

Met Arg Glu Ile Val  
210

<210> 47  
<211> 184  
<212> PRT  
<213> Homo sapiens

<400> 47

Met Ala Ala Ala Gly Gly Ala Arg Leu Leu Arg Ala Ala Ser Ala Val  
1 5 10 15

Leu Gly Gly Pro Ala Gly Arg Trp Leu His His Ala Gly Ser Arg Ala  
20 25 30

Gly Ser Ser Gly Leu Leu Arg Asn Arg Gly Pro Gly Gly Ser Ala Glu  
35 40 45

Ala Ser Arg Ser Leu Ser Val Ser Ala Arg Ala Arg Ser Ser Ser Glu  
50 55 60

Asp Lys Ile Thr Val His Phe Ile Asn Arg Asp Gly Glu Thr Leu Thr  
65 70 75 80

Thr Lys Gly Lys Val Gly Asp Ser Leu Leu Asp Val Val Val Glu Asn  
85 90 95

Asn Leu Asp Ile Asp Gly Phe Gly Ala Cys Glu Gly Thr Leu Ala Cys  
100 105 110

Ser Thr Cys His Leu Ile Phe Glu Asp His Ile Tyr Glu Lys Leu Asp  
115 120 125

Ala Ile Thr Asp Glu Glu Asn Asp Met Leu Asp Leu Ala Tyr Gly Leu  
130 135 140



Thr Asp Arg Ser Arg Leu Gly Cys Gln Ile Cys Leu Thr Lys Ser Met  
145 150 155 160

Asp Asn Met Thr Val Arg Val Pro Glu Thr Val Ala Asp Ala Arg Gln  
165 170 175

Ser Ile Asp Val Gly Lys Thr Ser  
180

<210> 48  
<211> 105  
<212> PRT  
<213> Homo sapiens

<400> 48

Met Gly Asp Val Glu Lys Gly Lys Lys Ile Phe Ile Met Lys Cys Ser  
1 5 10 15

Gln Cys His Thr Val Glu Lys Gly Gly Lys His Lys Thr Gly Pro Asn  
20 25 30

Leu His Gly Leu Phe Gly Arg Lys Thr Gly Gln Ala Pro Gly Tyr Ser  
35 40 45

Tyr Thr Ala Ala Asn Lys Asn Lys Gly Ile Ile Trp Gly Glu Asp Thr  
50 55 60

Leu Met Glu Tyr Leu Glu Asn Pro Lys Lys Tyr Ile Pro Gly Thr Lys  
65 70 75 80

Met Ile Phe Val Gly Ile Lys Lys Lys Glu Glu Arg Ala Asp Leu Ile  
85 90 95

Ala Tyr Leu Lys Lys Ala Thr Asn Glu  
100 105

<210> 49  
<211> 108  
<212> PRT  
<213> Neurospora crassa

<400> 49

Met Gly Phe Ser Ala Gly Asp Ser Lys Lys Gly Ala Asn Leu Phe Lys  
1 5 10 15

Thr Arg Cys Ala Gln Cys His Thr Leu Glu Glu Gly Gly Gly Asn Lys  
20 25 30

Ile Gly Pro Ala Leu His Gly Leu Phe Gly Arg Lys Thr Gly Ser Val  
Page 93

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40

45

Asp Gly Tyr Ala Tyr Thr Asp Ala Asn Lys Gln Lys Gly Ile Thr Trp  
 50 55 60

Asp Glu Asn Thr Leu Phe Glu Tyr Leu Glu Asn Pro Lys Lys Tyr Ile  
 65 70 75 80

Pro Gly Thr Lys Met Ala Phe Gly Gly Leu Lys Lys Asp Lys Asp Arg  
 85 90 95

Asn Asp Ile Ile Thr Phe Met Lys Glu Ala Thr Ala  
 100 105

<210> 50  
 <211> 903  
 <212> PRT  
 <213> Homo sapiens

<400> 50

Met Ala Ser Val Trp Gln Arg Leu Gly Phe Tyr Ala Ser Leu Leu Lys  
 1 5 10 15

Arg Gln Leu Asn Gly Gly Pro Asp Val Ile Lys Trp Glu Arg Arg Val  
 20 25 30

Ile Pro Gly Cys Thr Arg Ser Ile Tyr Ser Ala Thr Gly Lys Trp Thr  
 35 40 45

Lys Glu Tyr Thr Leu Gln Thr Arg Lys Asp Val Glu Lys Trp Trp His  
 50 55 60

Gln Arg Ile Lys Glu Gln Ala Ser Lys Ile Ser Glu Ala Asp Lys Ser  
 65 70 75 80

Lys Pro Lys Phe Tyr Val Leu Ser Met Phe Pro Tyr Pro Ser Gly Lys  
 85 90 95

Leu His Met Gly His Val Arg Val Tyr Thr Ile Ser Asp Thr Ile Ala  
 100 105 110

Arg Phe Gln Lys Met Arg Gly Met Gln Val Ile Asn Pro Met Gly Trp  
 115 120 125

Asp Ala Phe Gly Leu Pro Ala Glu Asn Ala Ala Val Glu Arg Asn Leu  
 130 135 140

His Pro Gln Ser Trp Thr Gln Ser Asn Ile Lys His Met Arg Lys Gln  
 145 150 155 160

Leu Asp Arg Leu Gly Leu Cys Phe Ser Trp Asp Arg Glu Ile Thr Thr  
 165 170 175  
 Cys Leu Pro Asp Tyr Tyr Lys Trp Thr Gln Tyr Leu Phe Ile Lys Leu  
 180 185 190  
 Tyr Glu Ala Gly Leu Ala Tyr Gln Lys Glu Ala Leu Val Asn Trp Asp  
 195 200 205  
 Pro Val Asp Gln Thr Val Leu Ala Asn Glu Gln Val Asp Glu His Gly  
 210 215 220  
 Cys Ser Trp Arg Ser Gly Ala Lys Val Glu Gln Lys Tyr Leu Arg Gln  
 225 230 235 240  
 Trp Phe Ile Lys Thr Thr Ala Tyr Ala Lys Ala Met Gln Asp Ala Leu  
 245 250 255  
 Ala Asp Leu Pro Glu Trp Tyr Gly Ile Lys Gly Met Gln Ala His Trp  
 260 265 270  
 Ile Gly Asp Cys Val Gly Cys His Leu Asp Phe Thr Leu Lys Val His  
 275 280 285  
 Gly Gln Ala Thr Gly Glu Lys Leu Thr Ala Tyr Thr Ala Thr Pro Glu  
 290 295 300  
 Ala Ile Tyr Gly Thr Ser His Val Ala Ile Ser Pro Ser His Arg Leu  
 305 310 315 320  
 Leu His Gly His Ser Ser Leu Lys Glu Ala Leu Arg Met Ala Leu Val  
 325 330 335  
 Pro Gly Lys Asp Cys Leu Thr Pro Val Met Ala Val Asn Met Leu Thr  
 340 345 350  
 Gln Gln Glu Val Pro Val Val Ile Leu Ala Lys Ala Asp Leu Glu Gly  
 355 360 365  
 Ser Leu Asp Ser Lys Ile Gly Ile Pro Ser Thr Ser Ser Glu Asp Thr  
 370 375 380  
 Ile Leu Ala Gln Thr Leu Gly Leu Ala Tyr Ser Glu Val Ile Glu Thr  
 385 390 395 400  
 Leu Pro Asp Gly Thr Glu Arg Leu Ser Ser Ser Ala Glu Phe Thr Gly  
 405 410 415

Met Thr Arg Gln Asp Ala Phe Leu Ala Leu Thr Gln Lys Ala Arg Gly  
 420 425 430  
 Lys Arg Val Gly Gly Asp Val Thr Ser Asp Lys Leu Lys Asp Trp Leu  
 435 440 445  
 Ile Ser Arg Gln Arg Tyr Trp Gly Thr Pro Ile Pro Ile Val His Cys  
 450 455 460  
 Pro Val Cys Gly Pro Thr Pro Val Pro Leu Glu Asp Leu Pro Val Thr  
 465 470 475 480  
 Leu Pro Asn Ile Ala Ser Phe Thr Gly Lys Gly Gly Pro Pro Leu Ala  
 485 490 495  
 Met Ala Ser Glu Trp Val Asn Cys Ser Cys Pro Arg Cys Lys Gly Ala  
 500 505 510  
 Ala Lys Arg Glu Thr Asp Thr Met Asp Thr Phe Val Asp Ser Ala Trp  
 515 520 525  
 Tyr Tyr Phe Arg Tyr Thr Asp Pro His Asn Pro His Ser Pro Phe Asn  
 530 535 540  
 Thr Ala Val Ala Asp Tyr Trp Met Pro Val Asp Leu Tyr Ile Gly Gly  
 545 550 555 560  
 Lys Glu His Ala Val Met His Leu Phe Tyr Ala Arg Phe Phe Ser His  
 565 570 575  
 Phe Cys His Asp Gln Lys Met Val Lys His Arg Glu Pro Phe His Lys  
 580 585 590  
 Leu Leu Ala Gln Gly Leu Ile Lys Gly Gln Thr Phe Arg Leu Pro Ser  
 595 600 605  
 Gly Gln Tyr Leu Gln Arg Glu Glu Val Asp Leu Thr Gly Ser Val Pro  
 610 615 620  
 Val His Ala Lys Thr Lys Glu Lys Leu Glu Val Thr Trp Glu Lys Met  
 625 630 635 640  
 Ser Lys Ser Lys His Asn Gly Val Asp Pro Glu Glu Val Val Glu Gln  
 645 650 655  
 Tyr Gly Ile Asp Thr Ile Arg Leu Tyr Ile Leu Phe Ala Ala Pro Pro  
 660 665 670

Glu Lys Asp Ile Leu Trp Asp Val Lys Thr Asp Ala Leu Pro Gly Val  
675 680 685

Leu Arg Trp Gln Gln Arg Leu Trp Thr Leu Thr Thr Arg Phe Ile Glu  
690 695 700

Ala Arg Ala Ser Gly Lys Ser Pro Gln Pro Gln Leu Leu Ser Asn Lys  
705 710 715 720

Glu Lys Ala Glu Ala Arg Lys Leu Trp Glu Tyr Lys Asn Ser Val Ile  
725 730 735

Ser Gln Val Thr Thr His Phe Thr Glu Asp Phe Ser Leu Asn Ser Ala  
740 745 750

Ile Ser Gln Leu Met Gly Leu Ser Asn Ala Leu Ser Gln Ala Ser Gln  
755 760 765

Ser Val Ile Leu His Ser Pro Glu Phe Glu Asp Ala Leu Cys Ala Leu  
770 775 780

Met Val Met Ala Ala Pro Leu Ala Pro His Val Thr Ser Glu Ile Trp  
785 790 795 800

Ala Gly Leu Ala Leu Val Pro Arg Lys Leu Cys Ala His Tyr Thr Trp  
805 810 815

Asp Ala Ser Val Leu Leu Gln Ala Trp Pro Ala Val Asp Pro Glu Phe  
820 825 830

Leu Gln Gln Pro Glu Val Val Gln Met Ala Val Leu Ile Asn Asn Lys  
835 840 845

Ala Cys Gly Lys Ile Pro Val Pro Gln Gln Val Ala Arg Asp Gln Asp  
850 855 860

Lys Val His Glu Phe Val Leu Gln Ser Glu Leu Gly Val Arg Leu Leu  
865 870 875 880

Gln Gly Arg Ser Ile Lys Lys Ser Phe Leu Ser Pro Arg Thr Ala Leu  
885 890 895

Ile Asn Phe Leu Val Gln Asp  
900

<210> 51  
<211> 103

<212> PRT  
<213> Homo sapiens

<400> 51

Met Trp Arg Val Cys Ala Arg Arg Ala Gln Asn Val Ala Pro Trp Ala  
1 5 10 15  
Gly Leu Glu Ala Arg Trp Thr Ala Leu Gln Glu Val Pro Gly Thr Pro  
20 25 30  
Arg Val Thr Ser Arg Ser Gly Pro Ala Pro Val Arg Arg Asn Ser Val  
35 40 45  
Thr Thr Gly Tyr Gly Gly Val Arg Ala Leu Cys Gly Trp Thr Pro Ser  
50 55 60  
Ser Gly Ala Thr Pro Arg Asn Arg Leu Leu Leu Gln Leu Leu Gly Ser  
65 70 75 80  
Pro Gly Arg Arg Tyr Tyr Ser Leu Pro Pro His Gln Lys Val Pro Leu  
85 90 95  
Pro Ser Leu Ser Pro Thr Met  
100

<210> 52  
<211> 102  
<212> PRT  
<213> Mus musculus

<400> 52

Met Ala Gly Gln Ala Phe Arg Lys Phe Leu Pro Leu Phe Asp Arg Val  
1 5 10 15  
Leu Val Glu Arg Ser Ala Ala Glu Thr Val Thr Lys Gly Gly Ile Met  
20 25 30  
Leu Pro Glu Lys Ser Gln Gly Lys Val Leu Gln Ala Thr Val Val Ala  
35 40 45  
Val Gly Ser Gly Gly Lys Gly Lys Ser Gly Glu Ile Glu Pro Val Ser  
50 55 60  
Val Lys Val Gly Asp Lys Val Leu Leu Pro Glu Tyr Gly Gly Thr Lys  
65 70 75 80  
Val Val Leu Asp Asp Lys Asp Tyr Phe Leu Phe Arg Asp Ser Asp Ile  
85 90 95

Leu Gly Lys Tyr Val Asp  
100

<210> 53  
<211> 568  
<212> PRT  
<213> Caenorhabditis elegans

<400> 53

Met Leu Arg Leu Ala Arg Lys Gly Leu Gln Thr Ala Val Val Arg Ser  
1 5 10 15

Tyr Ala Lys Asp Val Lys Phe Gly Ala Glu Gly Arg Gln Ala Met Leu  
20 25 30

Val Gly Val Asn Leu Leu Ala Asp Ala Val Ser Val Thr Met Gly Pro  
35 40 45

Lys Gly Arg Asn Val Ile Ile Glu Gln Ser Trp Gly Ser Pro Lys Ile  
50 55 60

Thr Lys Asp Gly Val Thr Val Ala Lys Ser Ile Asp Leu Lys Asp Lys  
65 70 75 80

Tyr Gln Asn Leu Gly Ala Lys Leu Ile Gln Asp Val Ala Asn Lys Ala  
85 90 95

Asn Glu Glu Ala Gly Asp Gly Thr Thr Cys Ala Thr Val Leu Ala Arg  
100 105 110

Ala Ile Ala Lys Glu Gly Phe Glu Ser Ile Arg Gln Gly Gly Asn Ala  
115 120 125

Val Glu Ile Arg Arg Gly Val Met Asn Ala Val Glu Val Val Val Ala  
130 135 140

Glu Leu Lys Lys Ile Ser Lys Lys Val Thr Thr Pro Glu Glu Ile Ala  
145 150 155 160

Gln Val Ala Thr Ile Ser Ala Asn Gly Asp Thr Val Val Gly Asn Leu  
165 170 175

Ile Ser Asp Ala Met Lys Lys Val Gly Thr Thr Gly Val Ile Thr Val  
180 185 190

Lys Asp Gly Lys Thr Leu Asn Asp Glu Leu Glu Leu Ile Glu Gly Met  
195 200 205

Lys Phe Asp Arg Gly Tyr Ile Ser Pro Tyr Phe Ile Thr Ser Ala Lys  
Page 99

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215

220

Gly Ala Lys Val Glu Tyr Glu Lys Ala Leu Val Leu Leu Ser Glu Lys  
225 230 235 240

Lys Ile Ser Gln Val Gln Asp Ile Val Pro Ala Leu Glu Leu Ala Asn  
245 250 255

Lys Leu Arg Arg Pro Leu Val Ile Ile Ala Glu Asp Val Asp Gly Glu  
260 265 270

Ala Leu Thr Thr Leu Val Leu Asn Arg Leu Lys Val Gly Leu Gln Val  
275 280 285

Val Ala Ile Lys Ala Pro Gly Phe Gly Asp Asn Arg Lys Asn Thr Leu  
290 295 300

Lys Asp Met Gly Ile Ala Thr Gly Ala Thr Ile Phe Gly Asp Asp Ser  
305 310 315 320

Asn Leu Ile Lys Ile Glu Asp Ile Thr Ala Asn Asp Leu Gly Glu Val  
325 330 335

Asp Glu Val Thr Ile Thr Lys Asp Asp Thr Leu Leu Leu Arg Gly Arg  
340 345 350

Gly Asp Gln Thr Glu Ile Glu Lys Arg Ile Glu His Ile Thr Asp Glu  
355 360 365

Ile Glu Gln Ser Thr Ser Asp Tyr Glu Lys Glu Lys Leu Asn Glu Arg  
370 375 380

Leu Ala Lys Leu Ser Lys Gly Val Ala Val Leu Lys Ile Gly Gly Gly  
385 390 395 400

Ser Glu Val Glu Val Gly Glu Lys Lys Asp Arg Val Thr Asp Ala Leu  
405 410 415

Cys Ala Thr Arg Ala Ala Val Glu Glu Gly Ile Val Pro Gly Gly Gly  
420 425 430

Val Ala Leu Leu Arg Ser Leu Thr Ala Leu Lys Asn Tyr Lys Ala Ala  
435 440 445

Asn Glu Asp Gln Gln Ile Gly Val Asn Ile Val Lys Lys Ala Leu Thr  
450 455 460

Gln Pro Ile Ala Thr Ile Val Lys Asn Ala Gly Leu Glu Pro Ser Ser  
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465                      470                      475                      480  
 Ile Ile Asp Glu Val Thr Gly Asn Ser Asn Thr Ser Tyr Gly Tyr Asp  
                                  485                                   490                                   495  
 Ala Leu Asn Gly Lys Phe Val Asp Met Phe Glu Ala Gly Ile Ile Asp  
                                  500                                   505                                   510  
 Pro Thr Lys Val Val Arg Thr Ala Leu Gln Asp Ala Ser Gly Val Ala  
                                  515                                   520                                   525  
 Ser Leu Leu Ala Thr Thr Glu Cys Val Val Thr Glu Ile Pro Lys Glu  
                                  530                                   535                                   540  
 Glu Ala Val Gly Gly Pro Ala Gly Gly Met Gly Gly Met Gly Gly Met  
                                  545                                   550                                   555                                   560  
 Gly Gly Met Gly Gly Met Gly Phe  
    565

<210> 54  
 <211> 517  
 <212> PRT  
 <213> Homo sapiens

<400> 54

Met Leu Arg Ala Ala Ala Arg Phe Gly Pro Arg Leu Gly Arg Arg Leu  
 1                                   5                                   10                                   15  
 Leu Ser Ala Ala Ala Thr Gln Ala Val Pro Ala Pro Asn Gln Gln Pro  
                                  20                                   25                                   30  
 Glu Val Phe Cys Asn Gln Ile Phe Ile Asn Asn Glu Trp His Asp Ala  
                                  35                                   40                                   45  
 Val Ser Arg Lys Thr Phe Pro Thr Val Asn Pro Ser Thr Gly Glu Val  
                                  50                                   55                                   60  
 Ile Cys Gln Val Ala Glu Gly Asp Lys Glu Asp Val Asp Lys Ala Val  
 65                                   70                                   75                                   80  
 Lys Ala Ala Arg Ala Ala Phe Gln Leu Gly Ser Pro Trp Arg Arg Met  
                                  85                                   90                                   95  
 Asp Ala Ser His Arg Gly Arg Leu Leu Asn Arg Leu Ala Asp Leu Ile  
                                  100                                   105                                   110  
 Glu Arg Asp Arg Thr Tyr Leu Ala Ala Leu Glu Thr Leu Asp Asn Gly  
                                  115                                   120                                   125

Lys Pro Tyr Val Ile Ser Tyr Leu Val Asp Leu Asp Met Val Leu Lys  
130 135 140

Cys Leu Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Tyr His Gly Lys Thr  
145 150 155 160

Ile Pro Ile Asp Gly Asp Phe Phe Ser Tyr Thr Arg His Glu Pro Val  
165 170 175

Gly Val Cys Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu Met Gln  
180 185 190

Ala Trp Lys Leu Gly Pro Ala Leu Ala Thr Gly Asn Val Val Val Met  
195 200 205

Lys Val Ala Glu Gln Thr Pro Leu Thr Ala Leu Tyr Val Ala Asn Leu  
210 215 220

Ile Lys Glu Ala Gly Phe Pro Pro Gly Val Val Asn Ile Val Pro Gly  
225 230 235 240

Phe Gly Pro Thr Ala Gly Ala Ala Ile Ala Ser His Glu Asp Val Asp  
245 250 255

Lys Val Ala Phe Thr Gly Ser Thr Glu Ile Gly Arg Val Ile Gln Val  
260 265 270

Ala Ala Gly Ser Ser Asn Leu Lys Arg Val Thr Leu Glu Leu Gly Gly  
275 280 285

Lys Ser Pro Asn Ile Ile Met Ser Asp Ala Asp Met Asp Trp Ala Val  
290 295 300

Glu Gln Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys Cys Cys  
305 310 315 320

Ala Gly Ser Arg Thr Phe Val Gln Glu Asp Ile Tyr Asp Glu Phe Val  
325 330 335

Glu Arg Ser Val Ala Arg Ala Lys Ser Arg Val Val Gly Asn Pro Phe  
340 345 350

Asp Ser Lys Thr Glu Gln Gly Pro Gln Val Asp Glu Thr Gln Phe Lys  
355 360 365

Lys Ile Leu Gly Tyr Ile Asn Thr Gly Lys Gln Glu Gly Ala Lys Leu  
370 375 380

Leu Cys Gly Gly Gly Ile Ala Ala Asp Arg Gly Tyr Phe Ile Gln Pro  
385 390 395 400

Thr Val Phe Gly Asp Val Gln Asp Gly Met Thr Ile Ala Lys Glu Glu  
405 410 415

Ile Phe Gly Pro Val Met Gln Ile Leu Lys Phe Lys Thr Ile Glu Glu  
420 425 430

Val Val Gly Arg Ala Asn Asn Ser Thr Tyr Gly Leu Ala Ala Ala Val  
435 440 445

Phe Thr Lys Asp Leu Asp Lys Ala Asn Tyr Leu Ser Gln Ala Leu Gln  
450 455 460

Ala Gly Thr Val Trp Val Asn Cys Tyr Asp Val Phe Gly Ala Gln Ser  
465 470 475 480

Pro Phe Gly Gly Tyr Lys Met Ser Gly Ser Gly Arg Glu Leu Gly Glu  
485 490 495

Tyr Gly Leu Gln Ala Tyr Thr Glu Val Lys Thr Val Thr Val Lys Val  
500 505 510

Pro Gln Lys Asn Ser  
515

<210> 55  
<211> 558  
<212> PRT  
<213> Homo sapiens

<400> 55

Met Tyr Arg Tyr Leu Gly Glu Ala Leu Leu Leu Ser Arg Ala Gly Pro  
1 5 10 15

Ala Ala Leu Gly Ser Ala Ser Ala Asp Ser Ala Ala Leu Leu Gly Trp  
20 25 30

Ala Arg Gly Gln Pro Ala Ala Ala Pro Gln Pro Gly Leu Ala Leu Ala  
35 40 45

Ala Arg Arg His Tyr Ser Glu Ala Val Ala Asp Arg Glu Asp Asp Pro  
50 55 60

Asn Phe Phe Lys Met Val Glu Gly Phe Phe Asp Arg Gly Ala Ser Ile  
65 70 75 80

Val Glu Asp Lys Leu Val Glu Asp Leu Arg Thr Arg Glu Ser Glu Glu  
 85 90 95  
 Gln Lys Arg Asn Arg Val Arg Gly Ile Leu Arg Ile Ile Lys Pro Cys  
 100 105 110  
 Asn His Val Leu Ser Leu Ser Phe Pro Ile Arg Arg Asp Asp Gly Ser  
 115 120 125  
 Trp Glu Val Ile Glu Gly Tyr Arg Ala Gln His Ser Gln His Arg Thr  
 130 135 140  
 Pro Cys Lys Gly Gly Ile Arg Tyr Ser Thr Asp Val Ser Val Asp Glu  
 145 150 155 160  
 Val Lys Ala Leu Ala Ser Leu Met Thr Tyr Lys Cys Ala Val Val Asp  
 165 170 175  
 Val Pro Phe Gly Gly Ala Lys Ala Gly Val Lys Ile Asn Pro Lys Asn  
 180 185 190  
 Tyr Thr Asp Asn Glu Leu Glu Lys Ile Thr Arg Arg Phe Thr Met Glu  
 195 200 205  
 Leu Ala Lys Lys Gly Phe Ile Gly Pro Gly Ile Asp Val Pro Ala Pro  
 210 215 220  
 Asp Met Ser Thr Gly Glu Arg Glu Met Ser Trp Ile Ala Asp Thr Tyr  
 225 230 235 240  
 Ala Ser Thr Ile Gly His Tyr Asp Ile Asn Ala His Ala Cys Val Thr  
 245 250 255  
 Gly Lys Pro Ile Ser Gln Gly Gly Ile His Gly Arg Ile Ser Ala Thr  
 260 265 270  
 Gly Arg Gly Val Phe His Gly Ile Glu Asn Phe Ile Asn Glu Ala Ser  
 275 280 285  
 Tyr Met Ser Ile Leu Gly Met Thr Pro Gly Phe Gly Asp Lys Thr Phe  
 290 295 300  
 Val Val Gln Gly Phe Gly Asn Val Gly Leu His Ser Met Arg Tyr Leu  
 305 310 315 320  
 His Arg Phe Gly Ala Lys Cys Ile Ala Val Gly Glu Ser Asp Gly Ser  
 325 330 335

Ile Trp Asn Pro Asp Gly Ile Asp Pro Lys Glu Leu Glu Asp Phe Lys  
340 345 350

Leu Gln His Gly Ser Ile Leu Gly Phe Pro Lys Ala Lys Pro Tyr Glu  
355 360 365

Gly Ser Ile Leu Glu Ala Asp Cys Asp Ile Leu Ile Pro Ala Ala Ser  
370 375 380

Glu Lys Gln Leu Thr Lys Ser Asn Ala Pro Arg Val Lys Ala Lys Ile  
385 390 395 400

Ile Ala Glu Gly Ala Asn Gly Pro Thr Thr Pro Glu Ala Asp Lys Ile  
405 410 415

Phe Leu Glu Arg Asn Ile Met Val Ile Pro Asp Leu Tyr Leu Asn Ala  
420 425 430

Gly Gly Val Thr Val Ser Tyr Phe Glu Trp Leu Lys Asn Leu Asn His  
435 440 445

Val Ser Tyr Gly Arg Leu Thr Phe Lys Tyr Glu Arg Asp Ser Asn Tyr  
450 455 460

His Leu Leu Met Ser Val Gln Glu Ser Leu Glu Arg Lys Phe Gly Lys  
465 470 475 480

His Gly Gly Thr Ile Pro Ile Val Pro Thr Ala Glu Phe Gln Asp Arg  
485 490 495

Ile Ser Gly Ala Ser Glu Lys Asp Ile Val His Ser Gly Leu Ala Tyr  
500 505 510

Thr Met Glu Arg Ser Ala Arg Gln Ile Met Arg Thr Ala Met Lys Tyr  
515 520 525

Asn Leu Gly Leu Asp Leu Arg Thr Ala Ala Tyr Val Asn Ala Ile Glu  
530 535 540

Lys Val Phe Lys Val Tyr Asn Glu Ala Gly Val Thr Phe Thr  
545 550 555

<210> 56  
<211> 509  
<212> PRT  
<213> Homo sapiens

<400> 56

Met Gln Ser Trp Ser Arg Val Tyr Cys Ser Leu Ala Lys Arg Gly His  
 1 5 10  
 Phe Asn Arg Ile Ser His Gly Leu Gln Gly Leu Ser Ala Val Pro Leu  
 20 25 30  
 Arg Thr Tyr Ala Asp Gln Pro Ile Asp Ala Asp Val Thr Val Ile Gly  
 35 40 45  
 Ser Gly Pro Gly Gly Tyr Val Ala Ala Ile Lys Ala Ala Gln Leu Gly  
 50 55 60  
 Phe Lys Thr Val Cys Ile Glu Lys Asn Glu Thr Leu Gly Gly Thr Cys  
 65 70 75 80  
 Leu Asn Val Gly Cys Ile Pro Ser Lys Ala Leu Leu Asn Asn Ser His  
 85 90 95  
 Tyr Tyr His Met Ala His Gly Thr Asp Phe Ala Ser Arg Gly Ile Glu  
 100 105 110  
 Met Ser Glu Val Arg Leu Asn Leu Asp Lys Met Met Glu Gln Lys Ser  
 115 120 125  
 Thr Ala Val Lys Ala Leu Thr Gly Gly Ile Ala His Leu Phe Lys Gln  
 130 135 140  
 Asn Lys Val Val His Val Asn Gly Tyr Gly Lys Ile Thr Gly Lys Asn  
 145 150 155 160  
 Gln Val Thr Ala Thr Lys Ala Asp Gly Gly Thr Gln Val Ile Asp Thr  
 165 170 175  
 Lys Asn Ile Leu Ile Ala Thr Gly Ser Glu Val Thr Pro Phe Pro Gly  
 180 185 190  
 Ile Thr Ile Asp Glu Asp Thr Ile Val Ser Ser Thr Gly Ala Leu Ser  
 195 200 205  
 Leu Lys Lys Val Pro Glu Lys Met Val Val Ile Gly Ala Gly Val Ile  
 210 215 220  
 Gly Val Glu Leu Gly Ser Val Trp Gln Arg Leu Gly Ala Asp Val Thr  
 225 230 235 240  
 Ala Val Glu Phe Leu Gly His Val Gly Gly Val Gly Ile Asp Met Glu  
 245 250 255

Ile Ser Lys Asn Phe Gln Arg Ile Leu Gln Lys Gln Gly Phe Lys Phe  
 260 265 270  
 Lys Leu Asn Thr Lys Val Thr Gly Ala Thr Lys Lys Ser Asp Gly Lys  
 275 280 285  
 Ile Asp Val Ser Ile Glu Ala Ala Ser Gly Gly Lys Ala Glu Val Ile  
 290 295 300  
 Thr Cys Asp Val Leu Leu Val Cys Ile Gly Arg Arg Pro Phe Thr Lys  
 305 310 315 320  
 Asn Leu Gly Leu Glu Glu Leu Gly Ile Glu Leu Asp Pro Arg Gly Arg  
 325 330 335  
 Ile Pro Val Asn Thr Arg Phe Gln Thr Lys Ile Pro Asn Ile Tyr Ala  
 340 345 350  
 Ile Gly Asp Val Val Ala Gly Pro Met Leu Ala His Lys Ala Glu Asp  
 355 360 365  
 Glu Gly Ile Ile Cys Val Glu Gly Met Ala Gly Gly Ala Val His Ile  
 370 375 380  
 Asp Tyr Asn Cys Val Pro Ser Val Ile Tyr Thr His Pro Glu Val Ala  
 385 390 395 400  
 Trp Val Gly Lys Ser Glu Glu Gln Leu Lys Glu Glu Gly Ile Glu Tyr  
 405 410 415  
 Lys Val Gly Lys Phe Pro Phe Ala Ala Asn Ser Arg Ala Lys Thr Asn  
 420 425 430  
 Ala Asp Thr Asp Gly Met Val Lys Ile Leu Gly Gln Lys Ser Thr Asp  
 435 440 445  
 Arg Val Leu Gly Ala His Ile Leu Gly Pro Gly Ala Gly Glu Met Val  
 450 455 460  
 Asn Glu Ala Ala Leu Ala Leu Glu Tyr Gly Ala Ser Cys Glu Asp Ile  
 465 470 475 480  
 Ala Arg Val Cys His Ala His Pro Thr Leu Ser Glu Ala Phe Arg Glu  
 485 490 495  
 Ala Asn Leu Ala Ala Ser Phe Gly Lys Ser Ile Asn Phe  
 500 505

<210> 57  
 <211> 390  
 <212> PRT  
 <213> Homo sapiens

<400> 57

Met Arg Lys Met Leu Ala Ala Val Ser Arg Val Leu Ser Gly Ala Ser  
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Gln Lys Pro Ala Ser Arg Val Leu Val Ala Ser Arg Asn Phe Ala Asn  
 20 25 30

Asp Ala Thr Phe Glu Ile Lys Lys Cys Asp Leu His Arg Leu Glu Glu  
 35 40 45

Gly Pro Pro Val Thr Thr Val Leu Thr Arg Glu Asp Gly Leu Lys Tyr  
 50 55 60

Tyr Arg Met Met Gln Thr Val Arg Arg Met Glu Leu Lys Ala Asp Gln  
 65 70 75 80

Leu Tyr Lys Gln Lys Ile Ile Arg Gly Phe Cys His Leu Cys Asp Gly  
 85 90 95

Gln Glu Ala Cys Cys Val Gly Leu Glu Ala Gly Ile Asn Pro Thr Asp  
 100 105 110

His Leu Ile Thr Ala Tyr Arg Ala His Gly Phe Thr Phe Thr Arg Gly  
 115 120 125

Leu Ser Val Arg Glu Ile Leu Ala Glu Leu Thr Gly Arg Lys Gly Gly  
 130 135 140

Cys Ala Lys Gly Lys Gly Gly Ser Met His Met Tyr Ala Lys Asn Phe  
 145 150 155 160

Tyr Gly Gly Asn Gly Ile Val Gly Ala Gln Val Pro Leu Gly Ala Gly  
 165 170 175

Ile Ala Leu Ala Cys Lys Tyr Asn Gly Lys Asp Glu Val Cys Leu Thr  
 180 185 190

Leu Tyr Gly Asp Gly Ala Ala Asn Gln Gly Gln Ile Phe Glu Ala Tyr  
 195 200 205

Asn Met Ala Ala Leu Trp Lys Leu Pro Cys Ile Phe Ile Cys Glu Asn  
 210 215 220

Asn Arg Tyr Gly Met Gly Thr Ser Val Glu Arg Ala Ala Ala Ser Thr  
 Page 108



225                      230                      235                      240  
 Asp Tyr Tyr Lys Arg Gly Asp Phe Ile Pro Gly Leu Arg Val Asp Gly  
                                  245                                   250                                   255  
 Met Asp Ile Leu Cys Val Arg Glu Ala Thr Arg Phe Ala Ala Tyr  
                                  260                                   265                                   270  
 Cys Arg Ser Gly Lys Gly Pro Ile Leu Met Glu Leu Gln Thr Tyr Arg  
                                  275                                   280                                   285  
 Tyr His Gly His Ser Met Ser Asp Pro Gly Val Ser Tyr Arg Thr Arg  
                                  290                                   295                                   300  
 Glu Glu Ile Gln Glu Val Arg Ser Lys Ser Asp Pro Ile Met Leu Leu  
                                  305                                   310                                   315                                   320  
 Lys Asp Arg Met Val Asn Ser Asn Leu Ala Ser Val Glu Glu Leu Lys  
                                  325                                   330                                   335  
 Glu Ile Asp Val Glu Val Arg Lys Glu Ile Glu Asp Ala Ala Gln Phe  
                                  340                                   345                                   350  
 Ala Thr Ala Asp Pro Glu Pro Pro Leu Glu Glu Leu Gly Tyr His Ile  
                                  355                                   360                                   365  
 Tyr Ser Ser Asp Pro Pro Phe Glu Val Arg Gly Ala Asn Gln Trp Ile  
                                  370                                   375                                   380  
 Lys Phe Lys Ser Val Ser  
                                  385                                   390

<210> 58  
 <211> 359  
 <212> PRT  
 <213> Homo sapiens

<400> 58

Met Ala Ala Val Ser Gly Leu Val Arg Arg Pro Leu Arg Glu Val Ser  
 1                                   5                                   10                                   15  
 Gly Leu Leu Lys Arg Arg Phe His Trp Thr Ala Pro Ala Ala Leu Gln  
                                  20                                   25                                   30  
 Val Thr Val Arg Asp Ala Ile Asn Gln Gly Met Asp Glu Glu Leu Glu  
                                  35                                   40                                   45  
 Arg Asp Glu Lys Val Phe Leu Leu Gly Glu Glu Val Ala Gln Tyr Asp  
                                  50                                   55                                   60

Gly Ala Tyr Lys Val Ser Arg Gly Leu Trp Lys Lys Tyr Gly Asp Lys  
65 70 75 80

Arg Ile Ile Asp Thr Pro Ile Ser Glu Met Gly Phe Ala Gly Ile Ala  
85 90 95

Val Gly Ala Ala Met Ala Gly Leu Arg Pro Ile Cys Glu Phe Met Thr  
100 105 110

Phe Asn Phe Ser Met Gln Ala Ile Asp Gln Val Ile Asn Ser Ala Ala  
115 120 125

Lys Thr Tyr Tyr Met Ser Gly Gly Leu Gln Pro Val Pro Ile Val Phe  
130 135 140

Arg Gly Pro Asn Gly Ala Ser Ala Gly Val Ala Ala Gln His Ser Gln  
145 150 155 160

Cys Phe Ala Ala Trp Tyr Gly His Cys Pro Gly Leu Lys Val Val Ser  
165 170 175

Pro Trp Asn Ser Glu Asp Ala Lys Gly Leu Ile Lys Ser Ala Ile Arg  
180 185 190

Asp Asn Asn Pro Val Val Val Leu Glu Asn Glu Leu Met Tyr Gly Val  
195 200 205

Pro Phe Glu Phe Pro Pro Glu Ala Gln Ser Lys Asp Phe Leu Ile Pro  
210 215 220

Ile Gly Lys Ala Lys Ile Glu Arg Gln Gly Thr His Ile Thr Val Val  
225 230 235 240

Ser His Ser Arg Pro Val Gly His Cys Leu Glu Ala Ala Ala Val Leu  
245 250 255

Ser Lys Glu Gly Val Glu Cys Glu Val Ile Asn Met Arg Thr Ile Arg  
260 265 270

Pro Met Asp Met Glu Thr Ile Glu Ala Ser Val Met Lys Thr Asn His  
275 280 285

Leu Val Thr Val Glu Gly Gly Trp Pro Gln Phe Gly Val Gly Ala Glu  
290 295 300

Ile Cys Ala Arg Ile Met Glu Gly Pro Ala Phe Asn Phe Leu Asp Ala  
305 310 315 320

Pro Ala Val Arg Val Thr Gly Ala Asp Val Pro Met Pro Tyr Ala Lys  
325 330 335

Ile Leu Glu Asp Asn Ser Ile Pro Gln Val Lys Asp Ile Ile Phe Ala  
340 345 350

Ile Lys Lys Thr Leu Asn Ile  
355

<210> 59  
<211> 388  
<212> PRT  
<213> Homo sapiens

<400> 59

Met Leu Ala Ala Phe Ile Ser Arg Val Leu Arg Arg Val Ala Gln Lys  
1 5 10 15

Ser Ala Arg Arg Val Leu Val Ala Ser Arg Asn Ser Ser Asn Asp Ala  
20 25 30

Thr Phe Glu Ile Lys Lys Cys Asp Leu Tyr Leu Leu Glu Glu Gly Pro  
35 40 45

Pro Val Thr Thr Val Leu Thr Arg Ala Glu Gly Leu Lys Tyr Tyr Arg  
50 55 60

Met Met Leu Thr Val Arg Arg Met Glu Leu Lys Ala Asp Gln Leu Tyr  
65 70 75 80

Lys Gln Lys Phe Ile Arg Gly Phe Cys His Leu Cys Asp Gly Gln Glu  
85 90 95

Ala Cys Cys Val Gly Leu Glu Ala Gly Ile Asn Pro Ser Asp His Val  
100 105 110

Ile Thr Ser Tyr Arg Ala His Gly Val Cys Tyr Thr Arg Gly Leu Ser  
115 120 125

Val Arg Ser Ile Leu Ala Glu Leu Thr Gly Arg Arg Gly Gly Cys Ala  
130 135 140

Lys Gly Lys Gly Gly Ser Met His Met Tyr Thr Lys Asn Phe Tyr Gly  
145 150 155 160

Gly Asn Gly Ile Val Gly Ala Gln Gly Pro Leu Gly Ala Gly Ile Ala  
165 170 175

Leu Ala Cys Lys Tyr Lys Gly Asn Asp Glu Ile Cys Leu Thr Leu Tyr  
180 185 190

Gly Asp Gly Ala Ala Asn Gln Gly Gln Ile Ala Glu Ala Phe Asn Met  
195 200 205

Ala Ala Leu Trp Lys Leu Pro Cys Val Phe Ile Cys Glu Asn Asn Leu  
210 215 220

Tyr Gly Met Gly Thr Ser Thr Glu Arg Ala Ala Ala Ser Pro Asp Tyr  
225 230 235 240

Tyr Lys Arg Gly Asn Phe Ile Pro Gly Leu Lys Val Asp Gly Met Asp  
245 250 255

Val Leu Cys Val Arg Glu Ala Thr Lys Phe Ala Ala Asn Tyr Cys Arg  
260 265 270

Ser Gly Lys Gly Pro Ile Leu Met Glu Leu Gln Thr Tyr Arg Tyr His  
275 280 285

Gly His Ser Met Ser Asp Pro Gly Val Ser Tyr Arg Thr Arg Glu Glu  
290 295 300

Ile Gln Glu Val Arg Ser Lys Arg Asp Pro Ile Ile Ile Leu Gln Asp  
305 310 315 320

Arg Met Val Asn Ser Lys Leu Ala Thr Val Glu Glu Leu Lys Glu Ile  
325 330 335

Gly Ala Glu Val Arg Lys Glu Ile Asp Asp Ala Ala Gln Phe Ala Thr  
340 345 350

Thr Asp Pro Glu Pro His Leu Glu Glu Leu Gly His His Ile Tyr Ser  
355 360 365

Ser Asp Ser Ser Phe Glu Val Arg Gly Ala Asn Pro Trp Ile Lys Phe  
370 375 380

Lys Ser Val Ser  
385

<210> 60  
<211> 445  
<212> PRT  
<213> Homo sapiens

<400> 60

Met Ala Val Ala Ile Ala Ala Ala Arg Val Trp Arg Leu Asn Arg Gly  
 1 5 10 15  
 Leu Ser Gln Ala Ala Leu Leu Leu Leu Arg Gln Pro Gly Ala Arg Gly  
 20 25 30  
 Leu Ala Arg Ser His Pro Pro Arg Gln Gln Gln Gln Phe Ser Ser Leu  
 35 40 45  
 Asp Asp Lys Pro Gln Phe Pro Gly Ala Ser Ala Glu Phe Ile Asp Lys  
 50 55 60  
 Leu Glu Phe Ile Gln Pro Asn Val Ile Ser Gly Ile Pro Ile Tyr Arg  
 65 70 75 80  
 Val Met Asp Arg Gln Gly Gln Ile Ile Asn Pro Ser Glu Asp Pro His  
 85 90 95  
 Leu Pro Lys Glu Lys Val Leu Lys Leu Tyr Lys Ser Met Thr Leu Leu  
 100 105 110  
 Asn Thr Met Asp Arg Ile Leu Tyr Glu Ser Gln Arg Gln Gly Arg Ile  
 115 120 125  
 Ser Phe Tyr Met Thr Asn Tyr Gly Glu Glu Gly Thr His Val Gly Ser  
 130 135 140  
 Ala Ala Ala Leu Asp Asn Thr Asp Leu Val Phe Gly Gln Tyr Arg Glu  
 145 150 155 160  
 Ala Gly Val Leu Met Tyr Arg Asp Tyr Pro Leu Glu Leu Phe Met Ala  
 165 170 175  
 Gln Cys Tyr Gly Asn Ile Ser Asp Leu Gly Lys Gly Arg Gln Met Pro  
 180 185 190  
 Val His Tyr Gly Cys Lys Glu Arg His Phe Val Thr Ile Ser Ser Pro  
 195 200 205  
 Leu Ala Thr Gln Ile Pro Gln Ala Val Gly Ala Ala Tyr Ala Ala Lys  
 210 215 220  
 Arg Ala Asn Ala Asn Arg Val Val Ile Cys Tyr Phe Gly Glu Gly Ala  
 225 230 235 240  
 Ala Ser Glu Gly Asp Ala His Ala Gly Phe Asn Phe Ala Ala Thr Leu  
 245 250 255

Glu Cys Pro Ile Ile Phe Phe Cys Arg Asn Asn Gly Tyr Ala Ile Ser  
260 265 270

Thr Pro Thr Ser Glu Gln Tyr Arg Gly Asp Gly Ile Ala Ala Arg Gly  
275 280 285

Pro Gly Tyr Gly Ile Met Ser Ile Arg Val Asp Gly Asn Asp Val Phe  
290 295 300

Ala Val Tyr Asn Ala Thr Lys Glu Ala Arg Arg Arg Ala Val Ala Glu  
305 310 315 320

Asn Gln Pro Phe Leu Ile Glu Ala Met Thr Tyr Arg Ile Gly His His  
325 330 335

Ser Thr Ser Asp Asp Ser Ser Ala Tyr Arg Ser Val Asp Glu Val Asn  
340 345 350

Tyr Trp Asp Lys Gln Asp His Pro Ile Ser Arg Leu Arg His Tyr Leu  
355 360 365

Leu Ser Gln Gly Trp Trp Asp Glu Glu Gln Glu Lys Ala Trp Arg Lys  
370 375 380

Gln Ser Arg Arg Lys Val Met Glu Ala Phe Glu Gln Ala Glu Arg Lys  
385 390 395 400

Pro Lys Pro Asn Pro Asn Leu Leu Phe Ser Asp Val Tyr Gln Glu Met  
405 410 415

Pro Ala Gln Leu Arg Lys Gln Gln Glu Ser Leu Ala Arg His Leu Gln  
420 425 430

Thr Tyr Gly Glu His Tyr Pro Leu Asp His Phe Asp Lys  
435 440 445

<210> 61  
<211> 338  
<212> PRT  
<213> Mus musculus

<400> 61

Met Leu Ser Ala Leu Ala Arg Pro Ala Gly Ala Ala Leu Arg Arg Ser  
1 5 10 15

Phe Ser Thr Ser Ala Gln Asn Asn Ala Lys Val Ala Val Leu Gly Ala  
20 25 30

Ser Gly Gly Ile Gly Gln Pro Leu Ser Leu Leu Leu Lys Asn Ser Pro  
Page 114

35

40

45

Leu Val Ser Arg Leu Thr Leu Tyr Asp Ile Ala His Thr Pro Gly Val  
50 55 60

Ala Ala Asp Leu Ser His Ile Glu Thr Arg Ala Asn Val Lys Gly Tyr  
65 70 75 80

Leu Gly Pro Glu Gln Leu Pro Asp Cys Leu Lys Gly Cys Asp Val Val  
85 90 95

Val Ile Pro Ala Gly Val Pro Arg Lys Pro Gly Met Thr Arg Asp Asp  
100 105 110

Leu Phe Asn Thr Asn Ala Thr Ile Val Ala Thr Leu Thr Ala Ala Cys  
115 120 125

Ala Gln His Cys Pro Glu Ala Met Val Cys Ile Ile Ala Asn Pro Val  
130 135 140

Asn Ser Thr Ile Pro Ile Thr Ala Glu Val Phe Lys Lys His Gly Val  
145 150 155 160

Tyr Asn Pro Asn Lys Ile Phe Gly Val Thr Thr Leu Asp Ile Val Arg  
165 170 175

Ala Asn Thr Phe Val Ala Glu Leu Lys Gly Leu Asp Pro Ala Arg Val  
180 185 190

Asn Val Pro Val Ile Gly Gly His Ala Gly Lys Thr Ile Ile Pro Leu  
195 200 205

Ile Ser Gln Cys Thr Pro Lys Val Asp Phe Pro Gln Asp Gln Leu Ala  
210 215 220

Thr Leu Thr Gly Arg Ile Gln Glu Ala Gly Thr Glu Val Val Lys Ala  
225 230 235 240

Lys Ala Gly Ala Gly Ser Ala Thr Leu Ser Met Ala Tyr Ala Gly Ala  
245 250 255

Arg Phe Val Phe Ser Leu Val Asp Ala Met Asn Gly Leu Glu Gly Val  
260 265 270

Val Glu Cys Ser Phe Val Gln Ser Lys Glu Thr Glu Cys Thr Tyr Phe  
275 280 285

Ser Thr Pro Leu Leu Leu Gly Lys Lys Gly Leu Glu Lys Asn Leu Gly  
Page 115

290

295

300

Ile Gly Lys Ile Thr Pro Phe Glu Glu Lys Met Ile Ala Glu Ala Ile  
305 310 315 320

Pro Glu Leu Lys Ala Ser Ile Lys Lys Gly Glu Asp Phe Val Lys Asn  
325 330 335

Met Lys

<210> 62

<211> 222

<212> PRT

<213> Homo sapiens

<400> 62

Met Leu Ser Arg Ala Val Cys Gly Thr Ser Arg Gln Leu Ala Pro Ala  
1 5 10 15

Leu Gly Tyr Leu Gly Ser Arg Gln Lys His Ser Leu Pro Asp Leu Pro  
20 25 30

Tyr Asp Tyr Gly Ala Leu Glu Pro His Ile Asn Ala Gln Ile Met Gln  
35 40 45

Leu His His Ser Lys His His Ala Ala Tyr Val Asn Asn Leu Asn Val  
50 55 60

Thr Glu Glu Lys Tyr Gln Glu Ala Leu Ala Lys Gly Asp Val Thr Ala  
65 70 75 80

Gln Ile Ala Leu Gln Pro Ala Leu Lys Phe Asn Gly Gly Gly His Ile  
85 90 95

Asn His Ser Ile Phe Trp Thr Asn Leu Ser Pro Asn Gly Gly Gly Glu  
100 105 110

Pro Lys Gly Glu Leu Leu Glu Ala Ile Lys Arg Asp Phe Gly Ser Phe  
115 120 125

Asp Lys Phe Lys Glu Lys Leu Thr Ala Ala Ser Val Gly Val Gln Gly  
130 135 140

Ser Gly Trp Gly Trp Leu Gly Phe Asn Lys Glu Arg Gly His Leu Gln  
145 150 155 160

Ile Ala Ala Cys Pro Asn Gln Asp Pro Leu Gln Gly Thr Thr Gly Leu  
165 170 175



Ile Pro Leu Leu Gly Ile Asp Val Trp Glu His Ala Tyr Tyr Leu Gln  
180 185 190

Tyr Lys Asn Val Arg Pro Asp Tyr Leu Lys Ala Ile Trp Asn Val Ile  
195 200 205

Asn Trp Glu Asn Val Thr Glu Arg Tyr Met Ala Cys Lys Lys  
210 215 220

<210> 63  
<211> 290  
<212> PRT  
<213> Homo sapiens

<400> 63

Met Ala Ala Leu Arg Val Leu Leu Ser Cys Ala Arg Gly Pro Leu Arg  
1 5 10 15

Pro Pro Val Arg Cys Pro Ala Trp Arg Pro Phe Ala Ser Gly Ala Asn  
20 25 30

Phe Glu Tyr Ile Ile Ala Glu Lys Arg Gly Lys Asn Asn Thr Val Gly  
35 40 45

Leu Ile Gln Leu Asn Arg Pro Lys Ala Leu Asn Ala Leu Cys Asp Gly  
50 55 60

Leu Ile Asp Glu Leu Asn Gln Ala Leu Lys Ile Phe Glu Glu Asp Pro  
65 70 75 80

Ala Val Gly Ala Ile Val Leu Thr Gly Gly Asp Lys Ala Phe Ala Ala  
85 90 95

Gly Ala Asp Ile Lys Glu Met Gln Asn Leu Ser Phe Gln Asp Cys Tyr  
100 105 110

Ser Ser Lys Phe Leu Lys His Trp Asp His Leu Thr Gln Val Lys Lys  
115 120 125

Pro Val Ile Ala Ala Val Asn Gly Tyr Ala Phe Gly Gly Gly Cys Glu  
130 135 140

Leu Ala Met Met Cys Asp Ile Ile Tyr Ala Gly Glu Lys Ala Gln Phe  
145 150 155 160

Ala Gln Pro Glu Ile Leu Ile Gly Thr Ile Pro Gly Ala Gly Gly Thr  
165 170 175

Gln Arg Leu Thr Arg Ala Val Gly Lys Ser Leu Ala Met Glu Met Val  
180 185 190

Leu Thr Gly Asp Arg Ile Ser Ala Gln Asp Ala Lys Gln Ala Gly Leu  
195 200 205

Val Ser Lys Ile Cys Pro Val Glu Thr Leu Val Glu Glu Ala Ile Gln  
210 215 220

Cys Ala Glu Lys Ile Ala Ser Asn Ser Lys Ile Val Val Ala Met Ala  
225 230 235 240

Lys Glu Ser Val Asn Ala Ala Phe Glu Met Thr Leu Thr Glu Gly Ser  
245 250 255

Lys Leu Glu Lys Lys Leu Phe Tyr Ser Thr Phe Ala Thr Asp Asp Arg  
260 265 270

Lys Glu Gly Met Thr Ala Phe Val Glu Lys Arg Lys Ala Asn Phe Lys  
275 280 285

Asp Gln  
290

<210> 64  
<211> 500  
<212> PRT  
<213> Homo sapiens

<400> 64

Met Ala Ser Met Leu Leu Ala Gln Arg Leu Ala Cys Ser Phe Gln His  
1 5 10 15

Thr Tyr Arg Leu Leu Val Pro Gly Ser Arg His Ile Ser Gln Ala Ala  
20 25 30

Ala Lys Val Asp Val Glu Phe Asp Tyr Asp Gly Pro Leu Met Lys Thr  
35 40 45

Glu Val Pro Gly Pro Arg Ser Gln Glu Leu Met Lys Gln Leu Asn Ile  
50 55 60

Ile Gln Asn Ala Glu Ala Val His Phe Phe Cys Asn Tyr Glu Glu Ser  
65 70 75 80

Arg Gly Asn Tyr Leu Val Asp Val Asp Gly Asn Arg Met Leu Asp Leu  
85 90 95

Tyr Ser Gln Ile Ser Ser Val Pro Ile Gly Tyr Ser His Pro Ala Leu  
100 105 110  
Leu Lys Leu Ile Gln Gln Pro Gln Asn Ala Ser Met Phe Val Asn Arg  
115 120 125  
Pro Ala Leu Gly Ile Leu Pro Pro Glu Asn Phe Val Glu Lys Leu Arg  
130 135 140  
Gln Ser Leu Leu Ser Val Ala Pro Lys Gly Met Ser Gln Leu Ile Thr  
145 150 155 160  
Met Ala Cys Gly Ser Cys Ser Asn Glu Asn Ala Leu Lys Thr Ile Phe  
165 170 175  
Met Trp Tyr Arg Ser Lys Glu Arg Gly Gln Arg Gly Phe Ser Lys Glu  
180 185 190  
Glu Leu Glu Thr Cys Met Ile Asn Gln Ala Pro Gly Cys Pro Asp Tyr  
195 200 205  
Ser Ile Leu Ser Phe Met Gly Ala Phe His Gly Arg Thr Met Gly Cys  
210 215 220  
Leu Ala Thr Thr His Ser Lys Ala Ile His Lys Ile Asp Ile Pro Ser  
225 230 235 240  
Phe Asp Trp Pro Ile Ala Pro Phe Pro Arg Leu Lys Tyr Pro Leu Glu  
245 250 255  
Glu Phe Val Lys Glu Asn Gln Gln Glu Glu Ala Gly Cys Leu Glu Glu  
260 265 270  
Val Glu Asp Leu Ile Val Lys Tyr Arg Lys Lys Lys Lys Thr Val Ala  
275 280 285  
Gly Ile Ile Val Glu Pro Ile Gln Ser Glu Gly Gly Asp Asn His Ala  
290 295 300  
Ser Asp Asp Phe Phe Arg Lys Leu Arg Asp Ile Ala Arg Lys His Cys  
305 310 315 320  
Cys Ala Phe Leu Val Asp Glu Val Gln Thr Gly Gly Gly Cys Thr Gly  
325 330 335  
Lys Phe Trp Ala His Glu His Trp Gly Leu Asp Asp Pro Ala Asp Val  
340 345 350

Met Thr Phe Ser Lys Lys Met Met Thr Gly Gly Phe Phe Leu Lys Glu  
 355 360 365  
 Glu Phe Arg Pro Asn Ala Pro Tyr Arg Ile Phe Asn Thr Trp Leu Gly  
 370 375 380  
 Asp Pro Ser Lys Asn Leu Leu Leu Ala Glu Val Ile Asn Ile Ile Lys  
 385 390 395 400  
 Arg Glu Asp Leu Leu Asn Asn Ala Ala His Ala Gly Lys Ala Leu Leu  
 405 410 415  
 Thr Gly Leu Leu Asp Leu Gln Ala Arg Tyr Pro Gln Phe Ile Ser Arg  
 420 425 430  
 Val Arg Gly Arg Gly Thr Phe Cys Ser Phe Asp Thr Pro Asp Asp Ser  
 435 440 445  
 Ile Arg Asn Lys Leu Ile Leu Ile Ala Arg Asn Lys Gly Val Val Leu  
 450 455 460  
 Gly Gly Cys Gly Asp Lys Ser Ile Arg Phe Arg Pro Thr Leu Val Phe  
 465 470 475 480  
 Arg Asp His His Ala His Leu Phe Leu Asn Ile Phe Ser Asp Ile Leu  
 485 490 495  
 Ala Asp Phe Lys  
 500

<210> 65  
 <211> 438  
 <212> PRT  
 <213> Homo sapiens

<400> 65

Met Ala Leu Arg Gly Val Ser Val Arg Leu Leu Ser Arg Gly Pro Gly  
 1 5 10 15  
 Leu His Val Leu Arg Thr Trp Val Ser Ser Ala Ala Gln Thr Glu Lys  
 20 25 30  
 Gly Gly Arg Thr Gln Ser Gln Leu Ala Lys Ser Ser Arg Pro Glu Phe  
 35 40 45  
 Asp Trp Gln Asp Pro Leu Val Leu Glu Glu Gln Leu Thr Thr Asp Glu  
 50 55 60  
 Ile Leu Ile Arg Asp Thr Phe Arg Thr Tyr Cys Gln Glu Arg Leu Met

65		70		75		80									
Pro	Arg	Ile	Leu	Leu	Ala	Asn	Arg	Asn	Glu	Val	Phe	His	Arg	Glu	Ile
			85						90					95	
Ile	Ser	Glu	Met	Gly	Glu	Leu	Gly	Val	Leu	Gly	Pro	Thr	Ile	Lys	Gly
			100					105					110		
Tyr	Gly	Cys	Ala	Gly	Val	Ser	Ser	Val	Ala	Tyr	Gly	Leu	Leu	Ala	Arg
		115					120					125			
Glu	Leu	Glu	Arg	Val	Asp	Ser	Gly	Tyr	Arg	Ser	Ala	Met	Ser	Val	Gln
	130					135					140				
Ser	Ser	Leu	Val	Met	His	Pro	Ile	Tyr	Ala	Tyr	Gly	Ser	Glu	Glu	Gln
145					150					155					160
Arg	Gln	Lys	Tyr	Leu	Pro	Gln	Leu	Ala	Lys	Gly	Glu	Leu	Leu	Gly	Cys
				165					170					175	
Phe	Gly	Leu	Thr	Glu	Pro	Asn	Ser	Gly	Ser	Asp	Pro	Ser	Ser	Met	Glu
			180					185					190		
Thr	Arg	Ala	His	Tyr	Asn	Ser	Ser	Asn	Lys	Ser	Tyr	Thr	Leu	Asn	Gly
		195					200					205			
Thr	Lys	Thr	Trp	Ile	Thr	Asn	Ser	Pro	Met	Ala	Asp	Leu	Phe	Val	Val
	210					215					220				
Trp	Ala	Arg	Cys	Glu	Asp	Gly	Cys	Ile	Arg	Gly	Phe	Leu	Leu	Glu	Lys
225					230					235					240
Gly	Met	Arg	Gly	Leu	Ser	Ala	Pro	Arg	Ile	Gln	Gly	Lys	Phe	Ser	Leu
				245					250					255	
Arg	Ala	Ser	Ala	Thr	Gly	Met	Ile	Ile	Met	Asp	Gly	Val	Glu	Val	Pro
			260					265					270		
Glu	Glu	Asn	Val	Leu	Pro	Gly	Ala	Ser	Ser	Leu	Gly	Gly	Pro	Phe	Gly
		275					280					285			
Cys	Leu	Asn	Asn	Ala	Arg	Tyr	Gly	Ile	Ala	Trp	Gly	Val	Leu	Gly	Ala
	290					295					300				
Ser	Glu	Phe	Cys	Leu	His	Thr	Ala	Arg	Gln	Tyr	Ala	Leu	Asp	Arg	Met
305					310					315					320
Gln	Phe	Gly	Val	Pro	Leu	Ala	Arg	Asn	Gln	Leu	Ile	Gln	Lys	Lys	Leu

325

330

335

Ala Asp Met Leu Thr Glu Ile Thr Leu Gly Leu His Ala Cys Leu Gln  
 340 345 350

Leu Gly Arg Leu Lys Asp Gln Asp Lys Ala Ala Pro Glu Met Val Ser  
 355 360 365

Leu Leu Lys Arg Asn Asn Cys Gly Lys Ala Leu Asp Ile Ala Arg Gln  
 370 375 380

Ala Arg Asp Met Leu Gly Gly Asn Gly Ile Ser Asp Glu Tyr His Val  
 385 390 395 400

Ile Arg His Ala Met Asn Leu Glu Ala Val Asn Thr Tyr Glu Gly Thr  
 405 410 415

His Asp Ile His Ala Leu Ile Leu Gly Arg Ala Ile Thr Gly Ile Gln  
 420 425 430

Ala Phe Thr Ala Ser Lys  
 435

<210> 66  
 <211> 438  
 <212> PRT  
 <213> Mus musculus

<400> 66

Met Ser Leu Arg Gly Val Ser Ala Gln Leu Leu Ser Arg Arg Ser Gly  
 1 5 10 15

Leu Arg Phe Pro Arg Phe Pro Arg Thr Trp Ser Ser Ala Ala Ala His  
 20 25 30

Thr Glu Lys Thr Gln Ile Arg Pro Ala Lys Ser Ser Arg Pro Val Phe  
 35 40 45

Asp Trp Lys Asp Pro Leu Ile Leu Glu Glu Gln Leu Thr Ala Asp Glu  
 50 55 60

Lys Leu Ile Arg Asp Thr Phe Arg Asn Tyr Trp Gln Glu Arg Leu Met  
 65 70 75 80

Ser Gln Ile Leu Leu Ala Asn Arg Asn Glu Val Phe His Arg Asp Ile  
 85 90 95

Val Tyr Glu Met Gly Glu Leu Gly Val Leu Gly Pro Thr Ile Lys Gly  
 100 105 110

Tyr Gly Cys Ala Gly Val Ser Ser Val Ala Tyr Gly Leu Leu Thr Arg  
 115 120 125  
 Glu Leu Glu Arg Val Asp Ser Gly Tyr Arg Ser Met Met Ser Val Gln  
 130 135 140  
 Ser Ser Leu Val Met His Pro Ile Tyr Thr Tyr Gly Ser Glu Glu Gln  
 145 150 155 160  
 Arg Gln Lys Tyr Leu Pro Arg Leu Ala Lys Gly Glu Leu Leu Gly Cys  
 165 170 175  
 Phe Gly Leu Thr Glu Pro Asn His Gly Ser Asp Pro Gly Gly Met Glu  
 180 185 190  
 Thr Arg Ala Arg His Asn Pro Ser Asn Gln Ser Tyr Thr Leu Ser Gly  
 195 200 205  
 Thr Lys Thr Trp Ile Thr Asn Ser Pro Val Ala Asp Leu Phe Ile Val  
 210 215 220  
 Trp Ala Arg Cys Glu Asp Asn Cys Ile Pro Gly Phe Ile Leu Glu Lys  
 225 230 235 240  
 Gly Met Arg Gly Ser Ser Ala Pro Arg Ile Glu Gly Lys Phe Ser Leu  
 245 250 255  
 Arg Ala Ser Ala Thr Gly Met Ile Ile Met Asp Ser Val Glu Val Pro  
 260 265 270  
 Glu Glu Asn Val Leu Pro Asn Val Ser Ser Leu Ala Gly Pro Phe Gly  
 275 280 285  
 Cys Leu Asn Thr Ala Arg Tyr Gly Ile Thr Trp Gly Val Leu Gly Ala  
 290 295 300  
 Ala Glu Phe Cys Leu His Thr Ala Arg Gln Tyr Ala Leu Asp Arg Ile  
 305 310 315 320  
 Gln Phe Gly Val Pro Leu Ala Arg Asn Gln Leu Val Gln Lys Lys Leu  
 325 330 335  
 Ala Asp Met Leu Thr Glu Ile Thr Leu Gly Leu His Ala Cys Leu Gln  
 340 345 350  
 Leu Gly Arg Leu Lys Asp Gln Asp Lys Ala Thr Pro Glu Met Val Ser  
 355 360 365

Met Leu Lys Arg Asn Asn Cys Gly Lys Ala Leu Asp Ile Ala Arg Gln  
370 375 380

Ala Arg Asp Ile Leu Gly Gly Asn Gly Ile Ser Asp Glu Tyr His Val  
385 390 395 400

Ile Arg His Ala Met Asn Leu Glu Ala Val Asn Thr Tyr Glu Gly Thr  
405 410 415

His Asp Ile His Ala Leu Ile Leu Gly Arg Ala Ile Thr Gly Ile Gln  
420 425 430

Ala Phe Thr Val Gly Lys  
435

<210> 67  
<211> 298  
<212> PRT  
<213> Caenorhabditis elegans

<400> 67

Met Phe Thr Ala Lys Cys Ala Met Gln Asn Ile Arg Asn Val Ala Ile  
1 5 10 15

Val Gly Ser Gly Gln Met Gly Ser Gly Ile Ala Gln Val Thr Ala Ser  
20 25 30

Ser Gly Phe Asn Val Met Leu Ala Asp Val Asn Lys Lys Ala Leu Asp  
35 40 45

Arg Ala Met Lys Ala Ile Ser Gln Ser Val Thr His Leu Ser Lys Lys  
50 55 60

Gln Lys Gly Thr Asp Lys Glu Lys Ser Asp Phe Val Thr Leu Thr Met  
65 70 75 80

Ser Arg Ile Lys Thr Cys Asn Asn Val Ser Thr Ala Val Ala Asp Ala  
85 90 95

Asp Leu Ile Ile Glu Ala Ala Ile Glu Asn Ile Asp Leu Lys Arg Gly  
100 105 110

Ile Phe Ala Gln Ile Glu Gln Ser Cys Lys Lys Asp Ser Ile Leu Thr  
115 120 125

Thr Asn Thr Ser Ser Phe Leu Leu Glu Asp Val Ala Lys Gly Leu Gln  
130 135 140



Asp Lys Thr Arg Phe Gly Gly Leu His Phe Phe Asn Pro Val Pro Val  
 145 150 155 160

Met Lys Leu Leu Glu Val Ile Arg Ser Asp Asp Thr Ser Asp Glu Thr  
 165 170 175

Tyr Ala Thr Leu Ile Lys Phe Gly Thr Ala Val Gly Lys Thr Thr Val  
 180 185 190

Ala Cys Lys Asp Ser Pro Gly Phe Ile Val Asn Arg Leu Leu Ile Pro  
 195 200 205

Tyr Phe Phe Glu Ala Ala Arg Met Tyr Glu Arg Gly Asp Ala Ser Met  
 210 215 220

Thr Asp Ile Asp Glu Ala Met Lys Leu Gly Ala Gly His Pro Met Gly  
 225 230 235 240

Pro Phe Glu Leu Ala Asp Tyr Ile Gly Leu Asp Thr Val Lys Phe Val  
 245 250 255

Met Asp Gly Trp Ala Ala Lys Tyr Pro Glu Val Gln Leu Phe Glu Ala  
 260 265 270

Ser Pro Leu Val Asp Lys Leu Val Ala Glu Gly Lys Leu Gly Arg Lys  
 275 280 285

Thr Gly Asp Gly Phe Tyr Ser Tyr Lys Lys  
 290 295

<210> 68  
 <211> 309  
 <212> PRT  
 <213> Caenorhabditis elegans

<400> 68

Met Leu Ser Ser Thr Cys Thr Ala Ala Val Arg Gly Leu Ser Thr Thr  
 1 5 10 15

Ala Gln Leu Ser Lys Ile Asn Asn Val Thr Ile Ile Gly Ala Gly Leu  
 20 25 30

Met Gly Ser Gly Ile Ala Gln Val Ser Ala Asn Ala Lys Leu Asn Val  
 35 40 45

Thr Val Val Asp Ser Asn Gln Ser Ala Leu Glu Lys Ala Gln Gln Gly  
 50 55 60

Ile Ala Asn Ser Leu Lys Arg Val Ala Lys Lys Lys His Ala Asp Asp  
 65 70 75 80  
 Ala Ala Ala Gln Thr Ala Leu Val Ser Ser Val Leu Asp Arg Ile Lys  
 85 90 95  
 Met Ser Thr Asn Val Ser Asp Ser Val Lys Asp Ala Asp Leu Val Ile  
 100 105 110  
 Glu Ala Ile Val Glu Asn Ile Asp Ile Lys Arg Lys Leu Phe Ala Glu  
 115 120 125  
 Val Glu Val Ala Ala Lys Pro Thr Thr Leu Ile Thr Thr Asn Thr Ser  
 130 135 140  
 Ser Leu Arg Leu Ala Asp Ile Gly Leu Asn Leu Lys Asp Lys Ser Arg  
 145 150 155 160  
 Phe Gly Gly Leu His Phe Phe Asn Pro Val Pro Met Met Lys Leu Leu  
 165 170 175  
 Glu Val Val Arg His Thr Glu Thr Ser Asp Ala Thr Phe Asn Gln Leu  
 180 185 190  
 Val Asp Tyr Gly Lys Thr Val Gly Lys Thr Thr Val Ala Cys Lys Asp  
 195 200 205  
 Thr Pro Gly Phe Ile Val Asn Arg Leu Leu Val Pro Tyr Met Phe Glu  
 210 215 220  
 Ala Leu Arg Leu Tyr Glu Arg Gly Asp Ala Ser Met Glu Asp Ile Asp  
 225 230 235 240  
 Val Ala Met Lys Leu Gly Ala Gly Tyr Pro Met Gly Pro Phe Glu Leu  
 245 250 255  
 Ser Asp Tyr Val Gly Leu Asp Thr Cys Lys Phe Ile Met Asp Gly Trp  
 260 265 270  
 His Ala Gln Tyr Pro Glu Glu Val Ala Phe Thr Pro Ser Pro Leu Leu  
 275 280 285  
 Asn Ser Leu Val Asp Ser Gly Lys Asn Gly Arg Lys Ser Gly Glu Gly  
 290 295 300  
 Phe Tyr Lys Tyr Lys  
 305

<210> 69  
<211> 573  
<212> PRT  
<213> Mus musculus

<400> 69

Met Leu Arg Leu Pro Thr Val Leu Arg Gln Met Arg Pro Val Ser Arg  
1 5 10 15

Ala Leu Ala Pro His Leu Thr Arg Ala Tyr Ala Lys Asp Val Lys Phe  
20 25 30

Gly Ala Asp Ala Arg Ala Leu Met Leu Gln Gly Val Asp Leu Leu Ala  
35 40 45

Asp Ala Val Ala Val Thr Met Gly Pro Lys Gly Arg Thr Val Ile Ile  
50 55 60

Glu Gln Ser Trp Gly Ser Pro Lys Val Thr Lys Asp Gly Val Thr Val  
65 70 75 80

Ala Lys Ser Ile Asp Leu Lys Asp Lys Tyr Lys Asn Ile Gly Ala Lys  
85 90 95

Leu Val Gln Asp Val Ala Asn Asn Thr Asn Glu Glu Ala Gly Asp Gly  
100 105 110

Thr Thr Thr Ala Thr Val Leu Ala Arg Ser Ile Ala Lys Glu Gly Phe  
115 120 125

Glu Lys Ile Ser Lys Gly Ala Asn Pro Val Glu Ile Arg Arg Gly Val  
130 135 140

Met Leu Ala Val Asp Ala Val Ile Ala Glu Leu Lys Lys Gln Ser Lys  
145 150 155 160

Pro Val Thr Thr Pro Glu Glu Ile Ala Gln Val Ala Thr Ile Ser Ala  
165 170 175

Asn Gly Asp Lys Asp Ile Gly Asn Ile Ile Ser Asp Ala Met Lys Lys  
180 185 190

Val Gly Arg Lys Gly Val Ile Thr Val Lys Asp Gly Lys Thr Leu Asn  
195 200 205

Asp Glu Leu Glu Ile Ile Glu Gly Met Lys Phe Asp Arg Gly Tyr Ile  
210 215 220

Ser Pro Tyr Phe Ile Asn Thr Ser Lys Gly Gln Lys Cys Glu Phe Gln  
Page 127



485

490

495

Ser Ser Ser Glu Val Gly Tyr Asp Ala Met Leu Gly Asp Phe Val Asn  
500 505 510

Met Val Glu Lys Gly Ile Ile Asp Pro Thr Lys Val Val Arg Thr Ala  
515 520 525

Leu Leu Asp Ala Ala Gly Val Ala Ser Leu Leu Thr Thr Ala Glu Ala  
530 535 540

Val Val Thr Glu Ile Pro Lys Glu Glu Lys Asp Pro Gly Met Gly Ala  
545 550 555 560

Met Gly Gly Met Gly Gly Gly Met Gly Gly Gly Met Phe  
565 570

<210> 70

<211> 325

<212> PRT

<213> Mus musculus

<400> 70

Met Ala Ser Val Arg Lys Ala Phe Pro Arg Arg Leu Val Gly Leu Thr  
1 5 10 15

Ser Leu Arg Ala Val Ser Thr Ser Ser Met Gly Thr Leu Pro Lys Gln  
20 25 30

Val Lys Ile Val Glu Val Gly Pro Arg Asp Gly Leu Gln Asn Glu Lys  
35 40 45

Ser Ile Val Pro Thr Pro Val Lys Ile Arg Leu Ile Asp Met Leu Ser  
50 55 60

Glu Ala Gly Leu Pro Val Ile Glu Ala Thr Ser Phe Val Ser Pro Asn  
65 70 75 80

Trp Val Pro Gln Met Ala Asp His Ser Asp Val Leu Lys Gly Ile Gln  
85 90 95

Lys Phe Pro Gly Ile Asn Tyr Pro Val Leu Thr Pro Asn Met Lys Gly  
100 105 110

Phe Glu Glu Ala Val Ala Ala Gly Ala Lys Glu Val Ser Val Phe Gly  
115 120 125

Ala Val Ser Glu Leu Phe Thr Arg Lys Asn Ala Asn Cys Ser Ile Glu  
130 135 140

Glu Ser Phe Gln Arg Phe Ala Gly Val Met Gln Ala Ala Gln Ala Ala  
145 150 155 160

Ser Ile Ser Val Arg Gly Tyr Val Ser Cys Ala Leu Gly Cys Pro Tyr  
165 170 175

Glu Gly Lys Val Ser Pro Ala Lys Val Ala Glu Val Ala Lys Lys Leu  
180 185 190

Tyr Ser Met Gly Cys Tyr Glu Ile Ser Leu Gly Asp Thr Ile Gly Val  
195 200 205

Gly Thr Pro Gly Leu Met Lys Asp Met Leu Thr Ala Val Met His Glu  
210 215 220

Val Pro Val Thr Ala Leu Gly Val His Cys His Asp Thr Ile Gly Gln  
225 230 235 240

Ala Leu Ala Asn Thr Leu Val Ala Leu Gln Met Gly Val Ser Val Val  
245 250 255

Asp Ser Ser Val Ala Gly Leu Gly Gly Cys Pro Tyr Ala Lys Gly Ala  
260 265 270

Ser Gly Asn Leu Ala Thr Glu Asp Leu Val Tyr Met Leu Asn Gly Leu  
275 280 285

Gly Ile His Thr Gly Val Asn Leu Gln Lys Leu Leu Glu Ala Gly Asp  
290 295 300

Phe Ile Cys Gln Ala Leu Asn Arg Lys Thr Ser Ser Lys Val Ala Gln  
305 310 315 320

Ala Thr Cys Lys Leu  
325

<210> 71  
<211> 134  
<212> PRT  
<213> Mus musculus

<400> 71

Val Val Asn Cys Ser Thr Pro Gly Asn Phe Phe His Val Leu Arg Arg  
1 5 10 15

Gln Ile Leu Leu Pro Phe Arg Lys Pro Leu Ile Val Phe Thr Pro Lys  
20 25 30

Ser Leu Leu Arg His Pro Glu Ala Arg Thr Ser Phe Asp Phe Thr Glu  
35 40 45

Met Leu Pro Gly Thr His Phe Gln Arg Val Ile Pro Glu Asn Gly Pro  
50 55 60

Ala Ala Gln Asp Pro His Lys Val Lys Arg Leu Leu Phe Cys Thr Gly  
65 70 75 80

Lys Val Tyr Tyr Asp Leu Thr Arg Glu Arg Lys Ala Arg Asn Met Glu  
85 90 95

Glu Glu Val Ala Ile Thr Arg Ile Glu Gln Phe Thr Leu Ser Pro Phe  
100 105 110

Pro Phe Asp Leu Leu Leu Lys Glu Ala Gln Lys Tyr Pro Asn Ala Glu  
115 120 125

Leu Ala Trp Cys Gln Glu  
130

<210> 72  
<211> 519  
<212> PRT  
<213> Mus musculus

<400> 72

Met Leu Arg Ala Ala Leu Thr Thr Val Arg Arg Gly Pro Arg Leu Ser  
1 5 10 15

Arg Leu Leu Ser Ala Ala Ala Thr Ser Ala Val Pro Ala Pro Asn His  
20 25 30

Gln Pro Glu Val Phe Cys Asn Gln Ile Phe Ile Asn Asn Glu Trp His  
35 40 45

Asp Ala Val Ser Arg Lys Thr Phe Pro Thr Val Asn Pro Ser Thr Gly  
50 55 60

Glu Val Ile Cys Gln Val Ala Glu Gly Asn Lys Glu Asp Val Asp Lys  
65 70 75 80

Ala Val Lys Ala Ala Arg Ala Ala Phe Gln Leu Gly Ser Pro Trp Arg  
85 90 95

Arg Met Asp Ala Ser Asp Arg Gly Arg Leu Leu Tyr Arg Leu Ala Asp  
100 105 110

Leu Ile Glu Arg Asp Arg Thr Tyr Leu Ala Ala Leu Glu Thr Leu Asp  
 115 120 125  
 Asn Gly Lys Pro Tyr Val Ile Ser Tyr Leu Val Asp Leu Asp Met Val  
 130 135 140  
 Leu Lys Cys Leu Arg Tyr Tyr Ala Gly Trp Ala Asp Lys Tyr His Gly  
 145 150 155 160  
 Lys Thr Ile Pro Ile Asp Gly Asp Phe Phe Ser Tyr Thr Arg His Glu  
 165 170 175  
 Pro Val Gly Val Cys Gly Gln Ile Ile Pro Trp Asn Phe Pro Leu Leu  
 180 185 190  
 Met Gln Ala Trp Lys Leu Gly Pro Ala Leu Ala Thr Gly Asn Val Val  
 195 200 205  
 Val Met Lys Val Ala Glu Gln Thr Pro Leu Thr Ala Leu Tyr Val Ala  
 210 215 220  
 Asn Leu Ile Lys Glu Ala Gly Phe Pro Pro Gly Val Val Asn Ile Val  
 225 230 235 240  
 Pro Gly Phe Gly Pro Thr Ala Gly Ala Ala Ile Ala Ser His Glu Gly  
 245 250 255  
 Val Asp Lys Val Ala Phe Thr Gly Ser Thr Glu Val Gly His Leu Ile  
 260 265 270  
 Gln Val Ala Ala Gly Ser Ser Asn Leu Lys Arg Val Thr Leu Glu Leu  
 275 280 285  
 Gly Gly Lys Ser Pro Asn Ile Ile Met Ser Asp Ala Asp Met Asp Trp  
 290 295 300  
 Ala Val Glu Gln Ala His Phe Ala Leu Phe Phe Asn Gln Gly Gln Cys  
 305 310 315 320  
 Cys Cys Ala Gly Ser Arg Thr Phe Val Gln Glu Asn Val Tyr Asp Glu  
 325 330 335  
 Phe Val Glu Arg Ser Val Ala Arg Ala Lys Ser Arg Val Val Gly Asn  
 340 345 350  
 Pro Phe Asp Ser Arg Thr Glu Gln Gly Pro Gln Val Asp Glu Thr Gln  
 355 360 365



Phe Lys Lys Ile Leu Gly Tyr Ile Lys Ser Gly Gln Gln Glu Gly Ala  
370 375 380

Lys Leu Leu Cys Gly Gly Gly Ala Ala Ala Asp Arg Gly Tyr Phe Ile  
385 390 395 400

Gln Pro Thr Val Phe Gly Asp Val Lys Asp Gly Met Thr Ile Ala Lys  
405 410 415

Glu Glu Ile Phe Gly Pro Val Met Gln Ile Leu Lys Phe Lys Thr Ile  
420 425 430

Glu Glu Val Val Gly Arg Ala Asn Asp Ser Lys Tyr Gly Leu Ala Ala  
435 440 445

Ala Val Phe Thr Lys Asp Leu Asp Lys Ala Asn Tyr Leu Ser Gln Ala  
450 455 460

Leu Gln Ala Gly Thr Val Trp Ile Asn Cys Tyr Asp Val Phe Gly Ala  
465 470 475 480

Gln Ser Pro Phe Gly Gly Tyr Lys Met Ser Gly Ser Gly Arg Glu Leu  
485 490 495

Gly Glu Tyr Gly Leu Gln Ala Tyr Thr Glu Val Lys Thr Val Thr Val  
500 505 510

Lys Val Pro Gln Lys Asn Ser  
515

<210> 73  
<211> 412  
<212> PRT  
<213> Mus musculus

<400> 73

Met Ala Ala Ala Leu Leu Ala Arg Ala Arg Gly Pro Leu Arg Arg Ala  
1 5 10 15

Leu Gly Val Arg Asp Trp Arg Arg Leu His Thr Val Tyr Gln Ser Val  
20 25 30

Glu Leu Pro Glu Thr His Gln Met Leu Arg Gln Thr Cys Arg Asp Phe  
35 40 45

Ala Glu Lys Glu Leu Val Pro Ile Ala Ala Gln Leu Asp Arg Glu His  
50 55 60

Leu Phe Pro Thr Ala Gln Val Lys Lys Met Gly Glu Leu Gly Leu Leu  
Page 133

65		70		75		80
Ala Met Asp Val	Pro	Glu Glu Leu Ser	Gly	Ala Gly Leu Gly	Tyr	Leu
	85		90		95	
Ala Tyr Ser	Ile	Ala Leu Glu Glu	Ile	Ser Arg Ala Cys	Ala	Ser Thr
	100		105		110	
Gly Val	Ile	Met Ser Val	Asn	Asn Ser Leu Tyr	Leu	Gly Pro Ile Leu
	115		120		125	
Lys Phe Gly	Ser	Ala Gln	Gln	Lys Gln Gln Trp	Ile	Thr Pro Phe Thr
	130		135		140	
Asn Gly Asp	Lys	Ile	Gly	Cys Phe Ala Leu	Ser	Glu Pro Gly Asn Gly
	145		150		155	160
Ser Asp Ala	Gly	Ala Ala	Ser Thr Thr	Ala Arg Glu Glu	Gly	Asp Ser
		165		170		175
Trp Val	Leu	Asn	Gly Thr	Lys Ala Trp	Ile Thr	Asn Ser Trp Glu Ala
		180		185		190
Ser Ala Thr	Val	Val Phe	Ala	Ser Thr Asp Arg	Ser	Arg Gln Asn Lys
	195			200		205
Gly Ile	Ser	Ala Phe	Leu	Val	Pro Met	Pro Thr Pro Gly Leu Thr Leu
	210			215		220
Gly Lys Lys	Glu	Asp	Lys	Leu Gly Ile	Arg	Ala Ser Ser Thr Ala Asn
	225		230		235	240
Leu Ile Phe	Glu	Asp	Cys Arg	Ile Pro	Lys	Glu Asn Leu Leu Gly Glu
		245			250	255
Pro Gly Met	Gly	Phe Lys	Ile	Ala Met	Gln Thr	Leu Asp Met Gly Arg
	260			265		270
Ile Gly	Ile	Ala Ser	Gln	Ala	Leu Gly	Ile Ala Gln Ala Ser Leu Asp
	275			280		285
Cys Ala Val	Lys	Tyr	Ala	Glu	Asn Arg	Asn Ala Phe Gly Ala Pro Leu
	290			295		300
Thr Lys Leu	Gln	Asn	Ile	Gln Phe	Lys Leu	Ala Asp Met Ala Leu Ala
	305		310		315	320
Leu Glu Ser	Ala	Arg	Leu	Leu Thr	Trp Arg	Ala Ala Met Leu Lys Asp

325

330

335

Asn Lys Lys Pro Phe Thr Lys Glu Ser Ala Met Arg Lys Leu Ala Ala  
 340 345 350

Ser Glu Ala Ala Thr Ala Ile Ser His Gln Ala Ile Gln Ile Leu Gly  
 355 360 365

Ser Met Gly Tyr Val Thr Glu Met Pro Ala Glu Arg Tyr Tyr Arg Asp  
 370 375 380

Ala Arg Ile Thr Glu Ile Tyr Glu Gly Thr Ser Glu Ile Gln Arg Leu  
 385 390 395 400

Val Ile Ala Gly His Leu Leu Arg Ser Tyr Arg Ser  
 405 410

<210> 74  
 <211> 435  
 <212> PRT  
 <213> Homo sapiens

<400> 74

Met Ala Ala Gly Phe Gly Arg Cys Cys Arg Val Leu Arg Ser Ile Ser  
 1 5 10 15

Arg Phe His Trp Arg Ser Gln His Thr Lys Ala Asn Arg Gln Arg Glu  
 20 25 30

Pro Gly Leu Gly Phe Ser Phe Glu Phe Thr Glu Gln Gln Phe Thr Lys  
 35 40 45

Glu Phe Gln Ala Thr Ala Arg Lys Phe Ala Arg Glu Glu Ile Ile Pro  
 50 55 60

Val Ala Ala Glu Tyr Asp Lys Thr Gly Glu Tyr Pro Val Pro Leu Ile  
 65 70 75 80

Arg Arg Ala Trp Glu Leu Gly Leu Met Asn Thr His Ile Pro Glu Asn  
 85 90 95

Cys Gly Gly Leu Gly Leu Gly Thr Phe Asp Phe Thr Ala Cys Leu Ile  
 100 105 110

Ser Glu Glu Leu Ala Tyr Gly Cys Thr Gly Val Gln Thr Ala Ile Glu  
 115 120 125

Gly Asn Ser Leu Gly Gln Met Pro Ile Ile Ile Ala Gly Asn Asp Gln  
 130 135 140

Gln Lys Lys Lys Tyr Leu Gly Arg Met Thr Glu Glu Pro Leu Met Cys  
145 150 155 160

Ala Tyr Cys Val Thr Glu Pro Phe Thr Gly Ala Gly Ser Asp Val Ala  
165 170 175

Gly Ile Lys Thr Lys Ala Glu Lys Lys Gly Asp Glu Tyr Ile Ile Asn  
180 185 190

Gly Gln Lys Met Trp Ile Thr Asn Gly Gly Lys Ala Asn Trp Tyr Phe  
195 200 205

Leu Leu Ala Arg Ser Asp Pro Asp Pro Lys Ala Pro Ala Asn Lys Ala  
210 215 220

Phe Thr Gly Phe Ile Val Phe Thr Glu Ala Asp Thr Pro Gly Ile Gln  
225 230 235 240

Ile Gly Arg Lys Glu Leu Asn Met Gly Gln Arg Cys Ser Asp Thr Arg  
245 250 255

Gly Ile Val Phe Glu Asp Val Lys Val Pro Lys Glu Asn Val Leu Ile  
260 265 270

Gly Asp Gly Ala Gly Phe Lys Val Ala Met Gly Ala Phe Asp Lys Thr  
275 280 285

Arg Phe Thr Pro Val Val Ala Ala Gly Ala Val Gly Leu Ala Gln Arg  
290 295 300

Ala Leu Asp Glu Ala Thr Lys Tyr Ala Leu Glu Arg Lys Thr Phe Gly  
305 310 315 320

Lys Leu Leu Val Glu His Gln Ala Ile Ser Phe Met Leu Ala Glu Met  
325 330 335

Ala Met Lys Val Glu Leu Ala Arg Met Ser Tyr Gln Arg Ala Phe Thr  
340 345 350

Ala Trp Glu Val Asp Ser Gly Arg Arg Asn Thr Tyr Tyr Ala Ser Ile  
355 360 365

Ala Lys Ala Phe Ala Gly Asp Ile Ala Asn Gln Leu Ala Thr Asp Ala  
370 375 380

Val Gln Ile Leu Gly Gly Asn Gly Phe Asn Thr Glu Tyr Pro Val Glu  
385 390 395 400

Lys Leu Met Arg Asp Ala Lys Ile Tyr Gln Ile Phe Thr Tyr Glu Gly  
405 410 415

Thr Ser Gln Ile Gln Arg Leu Ile Val Ala Arg Glu His Ile Asp Lys  
420 425 430

Tyr Lys Asn  
435

<210> 75  
<211> 450  
<212> PRT  
<213> Homo sapiens

<400> 75

Met Arg Leu Ala Arg Leu Leu Arg Gly Ala Ala Leu Ala Gly Pro Gly  
1 5 10 15

Pro Gly Leu Arg Ala Ala Gly Phe Ser Arg Ser Phe Ser Ser Asp Ser  
20 25 30

Gly Ser Ser Pro Ala Ser Glu Arg Gly Val Pro Gly Gln Phe Thr Val  
35 40 45

Asp Phe Tyr Ala Arg Phe Ser Pro Ser Pro Leu Ser Met Lys Gln Phe  
50 55 60

Leu Asp Phe Gly Ser Val Asn Ala Cys Glu Lys Thr Ser Phe Met Phe  
65 70 75 80

Leu Arg Gln Glu Leu Pro Val Arg Leu Ala Asn Ile Met Lys Glu Ile  
85 90 95

Ser Leu Leu Pro Asp Asn Leu Leu Arg Thr Phe Thr Pro Ser Val Gln  
100 105 110

Leu Val Gln Ser Trp Tyr Ile Gln Ser Leu Gln Glu Leu Leu Asp Phe  
115 120 125

Lys Asp Lys Ser Ala Glu Asp Ala Lys Ala Ile Tyr Asp Phe Thr Asp  
130 135 140

Thr Val Ile Arg Ile Arg Asn Arg His Asn Asp Val Ile Pro Thr Met  
145 150 155 160

Ala Gln Gly Val Ile Glu Tyr Phe Thr Lys Glu Ser Phe Gly Val Asp  
165 170 175

Pro Val Thr Ser<sub>180</sub> Gln Asn Val Gln Tyr<sub>185</sub> Phe Leu Asp Arg Phe<sub>190</sub> Tyr Met  
 Ser Arg Ile<sub>195</sub> Ser Ile Arg Met<sub>200</sub> Leu Leu Asn Gln His Ser<sub>205</sub> Leu Leu Phe  
 Gly Gly<sub>210</sub> Lys Gly Lys Gly Ser<sub>215</sub> Pro Ser His Arg Lys<sub>220</sub> His Ile Gly Ser  
 Ile<sub>225</sub> Asn Pro Asn Phe Thr<sub>230</sub> Cys Asn Val Leu Glu<sub>235</sub> Val Ile Lys Asp Gly<sub>240</sub>  
 Tyr Glu Asn Ala Arg<sub>245</sub> Arg Leu Cys Asp<sub>250</sub> Leu Tyr Tyr Ile Asn Ser<sub>255</sub> Pro  
 Glu Leu Glu Leu<sub>260</sub> Glu Glu Leu Asn Ala<sub>265</sub> Lys Ser Pro Gly Gln<sub>270</sub> Pro Ile  
 Gln Val Val<sub>275</sub> Tyr Val Pro Ser His<sub>280</sub> Leu Tyr His Met<sub>285</sub> Val Phe Glu Leu  
 Phe Phe<sub>290</sub> Thr Lys Asn Ala Met<sub>295</sub> Arg Ala Thr Met Glu<sub>300</sub> His His Ala Asn  
 Arg Gly Val Tyr Pro Pro<sub>310</sub> Ile Gln Val His Val<sub>315</sub> Thr Leu Gly Asn Glu<sub>320</sub>  
 Asp Leu Thr Val Lys<sub>325</sub> Met Ser Asp Arg Gly<sub>330</sub> Gly Gly Val Pro Leu<sub>335</sub> Arg  
 Lys Ile Asp Arg<sub>340</sub> Leu Phe Asn Tyr Met<sub>345</sub> Tyr Ser Thr Ala Pro Phe Thr  
 Arg Pro Arg<sub>355</sub> Val Glu Thr Ser Arg<sub>360</sub> Ala Val Pro Leu Ala<sub>365</sub> Gly Phe Gly  
 Tyr Gly<sub>370</sub> Leu Pro Ile Ser Arg<sub>375</sub> Leu Tyr Ala Gln Tyr<sub>380</sub> Phe Gln Gly Asp  
 Leu<sub>385</sub> Lys Leu Tyr Ser Leu<sub>390</sub> Glu Gly Tyr Gly Thr<sub>395</sub> Asp Ala Val Ile Tyr<sub>400</sub>  
 Ile Lys Ala Leu Ser<sub>405</sub> Thr Asp Ser Ile Glu<sub>410</sub> Arg Phe Thr Leu Pro Val<sub>415</sub>  
 Tyr Asn Lys Ala<sub>420</sub> Ala Trp Lys His Tyr<sub>425</sub> Asn Thr Asn His Glu<sub>430</sub> Ala Asp

Asp Trp Cys Val Pro Ser Arg Glu Pro Lys Asp Met Thr Thr Phe Arg  
 435 440 445

Ser Ala  
 450

<210> 76  
 <211> 222  
 <212> PRT  
 <213> Homo sapiens

<400> 76

Met Leu Ser Arg Ala Val Cys Gly Thr Ser Arg Gln Leu Ala Pro Ala  
 1 5 10 15

Leu Gly Tyr Leu Gly Ser Arg Gln Lys His Ser Leu Pro Asp Leu Pro  
 20 25 30

Tyr Asp Tyr Gly Ala Leu Glu Pro His Ile Asn Ala Gln Ile Met Gln  
 35 40 45

Leu His His Ser Lys His His Ala Ala Tyr Val Asn Asn Leu Asn Val  
 50 55 60

Thr Glu Glu Lys Tyr Gln Glu Ala Leu Ala Lys Gly Asp Val Thr Ala  
 65 70 75 80

Gln Ile Ala Leu Gln Pro Ala Leu Lys Phe Asn Gly Gly Gly His Ile  
 85 90 95

Asn His Ser Ile Phe Trp Thr Asn Leu Ser Pro Asn Gly Gly Gly Glu  
 100 105 110

Pro Lys Gly Glu Leu Leu Glu Ala Ile Lys Arg Asp Phe Gly Ser Phe  
 115 120 125

Asp Lys Phe Lys Glu Lys Leu Thr Ala Ala Ser Val Gly Val Gln Gly  
 130 135 140

Ser Gly Trp Gly Trp Leu Gly Phe Asn Lys Glu Arg Gly His Leu Gln  
 145 150 155 160

Ile Ala Ala Cys Pro Asn Gln Asp Pro Leu Gln Gly Thr Thr Gly Leu  
 165 170 175

Ile Pro Leu Leu Gly Ile Asp Val Trp Glu His Ala Tyr Tyr Leu Gln  
 180 185 190

Tyr Lys Asn Val Arg Pro Asp Tyr Leu Lys Ala Ile Trp Asn Val Ile  
195 200 205

Asn Trp Glu Asn Val Thr Glu Arg Tyr Met Ala Cys Lys Lys  
210 215 220

<210> 77  
<211> 421  
<212> PRT  
<213> Homo sapiens

<400> 77

Met Arg Trp Val Trp Ala Leu Leu Lys Asn Ala Ser Leu Ala Gly Ala  
1 5 10 15

Pro Lys Tyr Ile Glu His Phe Ser Lys Phe Ser Pro Ser Pro Leu Ser  
20 25 30

Met Lys Gln Phe Leu Asp Phe Gly Ser Ser Asn Ala Cys Phe Thr Glu  
35 40 45

Lys Thr Ser Phe Thr Phe Leu Arg Gln Glu Leu Pro Val Arg Leu Ala  
50 55 60

Asn Ile Met Lys Glu Ile Asn Leu Leu Pro Asp Arg Val Leu Ser Thr  
65 70 75 80

Pro Thr Val Gln Leu Val Gln Ser Trp Tyr Val Gln Ser Leu Leu Asp  
85 90 95

Ile Met Glu Phe Leu Asp Lys Asp Pro Glu Phe Thr Asp His Arg Thr  
100 105 110

Leu Ser Gln Phe Thr Asp Ala Leu Val Thr Ile Arg Asn Arg His Asn  
115 120 125

Asp Val Val Pro Thr Met Ala Gln Gly Val Leu Glu Tyr Lys Asp Thr  
130 135 140

Tyr Gly Asp Asp Pro Val Ser Asn Gln Asn Ile Gln Tyr Phe Leu Asp  
145 150 155 160

Arg Phe Tyr Leu Ser Arg Ile Phe Thr Ser Ile Arg Met Leu Ile Asn  
165 170 175

Gln His Thr Leu Ile Phe Asp Gly Ser Thr Asn Pro Ala His Pro Lys  
180 185 190

His Ile Gly Ser Ile Asp Pro Asn Cys Asn Val Ser Glu Val Val Lys  
Page 140



195		200		205											
Asp	Ala	Tyr	Asp	Met	Ala	Lys	Leu	Leu	Cys	Asp	Lys	Tyr	Tyr	Met	Ala
210						215					220				
Ser	Pro	Asp	Leu	Phe	Thr	Glu	Ile	Gln	Glu	Ile	Asn	Ala	Ala	Asn	Ser
225					230					235					240
Lys	Gln	Pro	Ile	His	Met	Val	Tyr	Val	Pro	Ser	His	Leu	Tyr	His	Met
				245					250					255	
Leu	Phe	Glu	Leu	Phe	Lys	Asn	Ala	Met	Arg	Ala	Thr	Val	Glu	Ser	His
			260					265					270		
Glu	Ser	Ser	Leu	Ile	Leu	Pro	Pro	Ile	Lys	Val	Met	Val	Ala	Leu	Gly
		275					280					285			
Glu	Phe	Thr	Glu	Asp	Leu	Ser	Ile	Lys	Met	Ser	Asp	Arg	Gly	Gly	Gly
	290					295					300				
Val	Pro	Leu	Arg	Lys	Ile	Glu	Arg	Leu	Phe	Ser	Tyr	Met	Tyr	Ser	Thr
305					310					315					320
Ala	Pro	Thr	Pro	Gln	Pro	Gly	Thr	Gly	Gly	Thr	Pro	Leu	Ala	Gly	Phe
				325					330					335	
Gly	Tyr	Gly	Leu	Pro	Ile	Ser	Arg	Leu	Tyr	Ala	Lys	Tyr	Phe	Phe	Thr
			340					345					350		
Gln	Gly	Asp	Leu	Gln	Leu	Phe	Ser	Met	Glu	Gly	Phe	Gly	Thr	Asp	Ala
		355					360					365			
Val	Ile	Tyr	Leu	Lys	Ala	Leu	Ser	Thr	Asp	Ser	Val	Glu	Arg	Leu	Pro
	370					375					380				
Val	Tyr	Asn	Lys	Ser	Ala	Trp	Arg	His	Tyr	Gln	Thr	Ile	Gln	Glu	Ala
385					390					395					400
Gly	Asp	Trp	Cys	Val	Pro	Ser	Thr	Glu	Pro	Lys	Phe	Thr	Asn	Thr	Ser
				405					410					415	
Thr	Tyr	Arg	Val	Thr											
			420												

<210> 78  
 <211> 420  
 <212> PRT  
 <213> Homo sapiens

<400> 78

Met Arg Leu Phe Arg Trp Leu Leu Lys Gln Pro Val Pro Lys Gln Ile  
1 5 10 15

Glu Arg Tyr Ser Arg Phe Ser Pro Ser Pro Leu Ser Ile Lys Gln Phe  
20 25 30

Leu Asp Phe Gly Arg Asp Asn Ala Cys Glu Lys Thr Ser Phe Thr Tyr  
35 40 45

Met Phe Leu Arg Lys Glu Leu Pro Val Arg Leu Ala Asn Thr Met Arg  
50 55 60

Glu Val Asn Leu Leu Pro Asp Asn Leu Leu Asn Arg Pro Ser Val Gly  
65 70 75 80

Leu Val Gln Ser Trp Tyr Met Gln Ser Phe Leu Glu Leu Leu Glu Tyr  
85 90 95

Glu Asn Leu Ser Pro Glu Asp Pro Gln Val Pro Thr Leu Asp Asn Phe  
100 105 110

Leu Gln Val Leu Ile Lys Val Arg Asn Arg His Asn Asp Val Val Pro  
115 120 125

Thr Met Ala Gln Gly Val Ile Glu Tyr Lys Glu Lys Phe Gly Phe Asp  
130 135 140

Pro Phe Ile Ser Thr Asn Ile Gln Tyr Phe Leu Asp Arg Phe Tyr Thr  
145 150 155 160

Asn Arg Ile Ser Phe Arg Met Phe Thr Leu Ile Asn Gln His Thr Leu  
165 170 175

Leu Phe Gly Gly Asp Thr Asn Pro Val His Pro Lys His Ile Gly Ser  
180 185 190

Ile Asp Pro Thr Cys Asn Val Ala Asp Val Val Lys Asp Ala Tyr Glu  
195 200 205

Thr Ala Lys Met Leu Cys Glu Gln Tyr Tyr Leu Val Ala Pro Glu Leu  
210 215 220

Glu Val Glu Glu Phe Thr Phe Asn Ala Lys Ala Pro Asp Lys Pro Ile  
225 230 235 240

Gln Val Val Tyr Val Pro Ser His Leu Phe His Met Leu Phe Glu Leu  
245 250 255

Phe Lys Asn Ser Met Arg Ala Thr Val Glu Leu Tyr Glu Asp Arg Lys  
260 265 270

Glu Gly Tyr Pro Ala Val Lys Thr Leu Val Thr Leu Gly Lys Glu Asp  
275 280 285

Leu Phe Thr Ser Ile Lys Ile Ser Asp Leu Gly Gly Gly Val Pro Leu  
290 295 300

Arg Lys Ile Asp Arg Leu Phe Asn Tyr Met Tyr Ser Thr Ala Pro Arg  
305 310 315 320

Pro Ser Leu Glu Pro Thr Arg Ala Ala Pro Leu Ala Gly Phe Gly Tyr  
325 330 335

Gly Leu Pro Ile Ser Arg Leu Tyr Ala Arg Tyr Phe Gln Gly Phe Thr  
340 345 350

Asp Leu Lys Leu Tyr Ser Met Glu Gly Val Gly Thr Asp Ala Val Ile  
355 360 365

Tyr Leu Lys Ala Leu Ser Ser Glu Ser Phe Glu Arg Leu Pro Val Phe  
370 375 380

Asn Lys Ser Ala Trp Arg His Tyr Lys Thr Thr Pro Glu Ala Asp Asp  
385 390 395 400

Trp Ser Asn Pro Ser Ser Glu Pro Arg Asp Ala Phe Thr Ser Lys Tyr  
405 410 415

Lys Ala Lys Gln  
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<210> 79  
<211> 789  
<212> PRT  
<213> Homo sapiens

<400> 79

Met Val Ala Cys Arg Ala Ile Gly Ile Leu Ser Arg Phe Ser Ala Phe  
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Arg Ile Leu Arg Ser Arg Gly Tyr Ile Cys Arg Asn Phe Thr Gly Ser  
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Ser Ala Leu Leu Thr Arg Thr His Ile Asn Tyr Gly Val Phe Thr Lys  
35 40 45

Gly Asp Val Ala Val Val Arg Ile Asn Ser Pro Asn Ser Lys Val Asn  
 50 55 60  
 Thr Leu Ser Lys Glu Leu His Ser Glu Phe Ser Glu Val Met Asn Glu  
 65 70 75 80  
 Ile Trp Ala Ser Asp Gln Ile Arg Ser Ala Val Leu Ile Ser Ser Lys  
 85 90 95  
 Pro Gly Cys Phe Ile Ala Gly Ala Asp Ile Phe Thr Asn Met Leu Ala  
 100 105 110  
 Ala Cys Lys Thr Leu Gln Glu Val Thr Gln Leu Ser Gln Glu Ala Gln  
 115 120 125  
 Arg Ile Val Glu Lys Leu Glu Lys Ser Thr Lys Pro Ile Val Ala Ala  
 130 135 140  
 Ile Asn Gly Ser Cys Leu Gly Gly Gly Leu Glu Leu Ala Ile Ser Cys  
 145 150 155 160  
 Gln Tyr Arg Ile Ala Thr Leu Phe Thr Asp Arg Lys Thr Val Leu Gly  
 165 170 175  
 Ala Pro Glu Val Leu Leu Gly Ile Leu Pro Gly Ala Gly Gly Thr Gln  
 180 185 190  
 Arg Leu Pro Lys Met Val Gly Val Pro Ala Val Phe Asp Met Met Leu  
 195 200 205  
 Thr Gly Arg Asn Ile Arg Ala Asp Ser Ala Lys Lys Met Gly Leu Val  
 210 215 220  
 Asp Gln Leu Val Phe Thr Glu Pro Leu Gly Pro Gly Leu Lys Pro Pro  
 225 230 235 240  
 Glu Glu Arg Thr Ile Glu Tyr Leu Glu Glu Val Ala Ile Thr Phe Ala  
 245 250 255  
 Lys Gly Leu Ala Asp Lys Lys Ile Ser Pro Lys Arg Asp Lys Gly Leu  
 260 265 270  
 Val Glu Lys Leu Thr Ala Tyr Ala Met Thr Ile Pro Phe Val Arg Gln  
 275 280 285  
 Gln Phe Thr Val Tyr Lys Lys Val Gln Gln Lys Val Arg Lys Gln Thr  
 290 295 300

Lys Gly Leu Tyr Pro Ala Pro Leu Lys Ile Ile Asp Val Val Lys Thr  
 305 310 315 320  
 Gly Ile Glu Gln Gly Ser Asp Ala Gly Tyr Leu Cys Glu Ser Gln Lys  
 325 330 335  
 Phe Gly Glu Leu Val Met Thr Lys Glu Ser Lys Ala Leu Met Phe Thr  
 340 345 350  
 Gly Leu Tyr His Gly Gln Val Leu Cys Lys Lys Asn Lys Phe Gly Ala  
 355 360 365  
 Pro Gln Lys Asp Val Lys His Leu Ala Ile Leu Gly Ala Gly Leu Met  
 370 375 380  
 Gly Ala Gly Ile Ala Gln Val Ser Val Asp Lys Gly Leu Lys Thr Ile  
 385 390 395 400  
 Leu Lys Asp Ala Thr Leu Thr Ala Leu Asp Arg Phe Thr Gly Gln Gln  
 405 410 415  
 Gln Val Phe Lys Gly Leu Asn Asp Lys Val Lys Lys Lys Ala Leu Thr  
 420 425 430  
 Ser Phe Glu Arg Asp Ser Ile Phe Ser Asn Leu Thr Gly Gln Leu Asp  
 435 440 445  
 Tyr Gln Gly Phe Glu Lys Ala Asp Met Val Ile Glu Ala Val Phe Glu  
 450 455 460  
 Asp Leu Ser Leu Lys His Arg Val Phe Thr Leu Lys Glu Val Glu Ala  
 465 470 475 480  
 Val Ile Pro Asp His Cys Ile Phe Ala Ser Asn Thr Ser Ala Leu Pro  
 485 490 495  
 Ile Ser Glu Ile Ala Ala Val Ser Lys Arg Pro Glu Lys Val Ile Gly  
 500 505 510  
 Met His Tyr Phe Ser Pro Val Asp Lys Met Gln Leu Leu Glu Ile Ile  
 515 520 525  
 Thr Thr Glu Leu Thr Phe Thr Ser Lys Asp Thr Ser Ala Ser Ala Val  
 530 535 540  
 Ala Val Gly Leu Lys Gln Gly Lys Val Ile Ile Val Val Lys Asp Gly  
 545 550 555 560

Pro Gly Phe Tyr Thr Thr Arg Cys Leu Ala Pro Met Met Ser Glu Val  
 565 570 575  
 Ile Arg Ile Leu Gln Glu Gly Val Asp Pro Lys Lys Leu Asp Ser Leu  
 580 585 590  
 Thr Pro Phe Thr Ser Phe Gly Phe Pro Val Gly Ala Ala Thr Leu Val  
 595 600 605  
 Asp Glu Val Gly Val Asp Val Ala Lys His Val Ala Glu Asp Leu Gly  
 610 615 620  
 Lys Val Phe Gly Glu Arg Phe Gly Gly Gly Asn Pro Glu Leu Leu Thr  
 625 630 635 640  
 Gln Met Val Ser Lys Gly Phe Leu Gly Arg Lys Ser Gly Lys Gly Phe  
 645 650 655  
 Thr Phe Tyr Ile Tyr Gln Glu Gly Val Leu Arg Lys Asp Leu Asn Ser  
 660 665 670  
 Asp Met Asp Ser Ile Leu Ala Ser Leu Lys Leu Pro Pro Lys Ser Glu  
 675 680 685  
 Val Ser Ser Asp Glu Asp Ile Gln Phe Arg Leu Val Thr Arg Phe Val  
 690 695 700  
 Asn Glu Ala Val Met Cys Leu Gln Glu Gly Ile Leu Phe Thr Ala Thr  
 705 710 715 720  
 Pro Ala Glu Gly Asp Ile Gly Ala Val Phe Gly Leu Gly Phe Pro Pro  
 725 730 735  
 Cys Leu Gly Gly Pro Phe Arg Phe Val Asp Leu Tyr Gly Ala Gln Lys  
 740 745 750  
 Ile Val Asp Arg Leu Lys Lys Tyr Glu Ala Ala Tyr Gly Lys Gln Phe  
 755 760 765  
 Thr Pro Cys Gln Leu Leu Ala Asp His Phe Thr Ala Asn Ser Pro Asn  
 770 775 780  
 Lys Lys Phe Tyr Gln  
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 <212> PRT

<213> homo sapiens

<400> 80

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Trp Ala Leu Arg Phe Ser Ile Arg Pro Leu Ser Cys Ser Ser Gln Leu  
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Arg Ala Ala Pro Ala Val Gln Thr Lys Thr Lys Lys Thr Phe Thr Leu  
35 40 45

Ala Lys Pro Asn Ile Arg Asn Val Val Val Val Asp Gly Val Arg Thr  
50 55 60

Pro Phe Leu Leu Ser Gly Thr Ser Tyr Lys Asp Leu Met Pro His Asp  
65 70 75 80

Leu Ala Arg Ala Ala Leu Thr Gly Leu Leu His Arg Thr Ser Val Pro  
85 90 95

Lys Glu Val Val Asp Tyr Ile Ile Phe Gly Phe Thr Thr Val Ile Gln  
100 105 110

Glu Val Lys Thr Ser Asn Val Ala Arg Glu Ala Ala Leu Gly Ala Gly  
115 120 125

Phe Ser Asp Lys Thr Pro Ala His Thr Val Thr Met Ala Cys Ile Ser  
130 135 140

Ala Asn Gln Ala Met Thr Thr Gly Val Gly Leu Ile Ala Ser Gly Gln  
145 150 155 160

Cys Asp Val Ile Val Ala Gly Phe Thr Gly Val Glu Leu Met Ser Asp  
165 170 175

Val Pro Ile Arg His Ser Arg Lys Met Arg Lys Leu Met Leu Asp Leu  
180 185 190

Asn Lys Ala Lys Ser Met Gly Gln Arg Leu Ser Leu Ile Ser Lys Phe  
195 200 205

Arg Phe Asn Phe Leu Ala Pro Glu Leu Pro Ala Val Ser Glu Phe Ser  
210 215 220

Thr Ser Glu Thr Phe Thr Met Gly His Ser Ala Asp Arg Leu Ala Ala  
225 230 235 240

Ala	Phe	Ala	Val	Ser 245	Arg	Leu	Glu	Gln	Asp 250	Glu	Tyr	Ala	Leu	Arg 255	Ser
His	Ser	Leu	Ala 260	Lys	Lys	Ala	Gln	Asp 265	Glu	Gly	Leu	Leu	Ser 270	Asp	Val
Val	Pro	Phe 275	Lys	Val	Pro	Gly	Lys 280	Asp	Thr	Val	Thr	Lys 285	Asp	Asn	Gly
Ile	Phe 290	Thr	Arg	Pro	Ser	Ser 295	Leu	Glu	Gln	Met	Ala 300	Lys	Leu	Lys	Pro
Ala 305	Phe	Ile	Lys	Pro	Tyr 310	Gly	Thr	Val	Thr	Ala 315	Ala	Asn	Ser	Ser	Phe 320
Leu	Thr	Asp	Gly	Ala 325	Ser	Ala	Met	Leu	Ile 330	Met	Ala	Glu	Glu	Lys 335	Ala
Leu	Ala	Met	Gly 340	Tyr	Lys	Pro	Lys	Ala 345	Tyr	Leu	Arg	Asp	Phe 350	Met	Tyr
Val	Ser	Gln 355	Asp	Pro	Lys	Asp	Gln 360	Leu	Leu	Leu	Gly	Pro 365	Thr	Tyr	Ala
Thr	Pro 370	Lys	Val	Leu	Glu	Lys 375	Ala	Gly	Leu	Thr	Met 380	Asn	Asp	Ile	Asp
Ala 385	Phe	Glu	Phe	His	Glu 390	Ala	Phe	Ser	Gly	Gln 395	Ile	Leu	Ala	Asn	Phe 400
Lys	Ala	Met	Asp	Ser 405	Asp	Trp	Phe	Ala	Phe 410	Thr	Glu	Asn	Tyr	Met 415	Gly
Arg	Lys	Thr	Lys 420	Val	Gly	Leu	Pro	Pro 425	Leu	Glu	Lys	Phe	Asn 430	Asn	Trp
Gly	Gly	Ser 435	Leu	Ser	Leu	Gly	His 440	Pro	Phe	Gly	Ala	Thr 445	Gly	Cys	Arg
Leu	Val 450	Met	Ala	Ala	Ala	Asn 455	Arg	Leu	Arg	Lys	Glu 460	Gly	Gly	Gln	Tyr
Gly 465	Leu	Val	Ala	Ala	Cys 470	Phe	Thr	Ala	Ala	Gly 475	Gly	Gln	Gly	His	Ala 480
Met	Ile	Val	Glu 485	Ala	Tyr	Pro	Lys								



<210> 81  
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<212> PRT  
<213> Homo sapiens

<400> 81

Met Leu Lys Phe Arg Thr Val His Gly Gly Leu Arg Leu Leu Gly Ile  
1 5 10 15

Arg Arg Thr Ser Thr Ala Pro Ala Ala Ser Pro Asn Val Arg Arg Leu  
20 25 30

Glu Tyr Lys Pro Ile Lys Lys Val Met Val Ala Asn Arg Phe Thr Gly  
35 40 45

Glu Ile Ala Ile Arg Val Phe Arg Ala Cys Thr Glu Leu Gly Ile Arg  
50 55 60

Thr Val Ala Ile Tyr Ser Glu Gln Asp Thr Gly Gln Met His Arg Gln  
65 70 75 80

Lys Ala Asp Glu Ala Tyr Leu Ile Gly Arg Gly Leu Ala Pro Val Gln  
85 90 95

Ala Tyr Leu His Ile Pro Asp Ile Ile Lys Phe Thr Val Ala Lys Glu  
100 105 110

Asn Asn Val Asp Ala Val His Pro Gly Tyr Gly Phe Leu Ser Glu Arg  
115 120 125

Ala Asp Phe Ala Gln Ala Cys Gln Asp Ala Gly Val Arg Phe Ile Gly  
130 135 140

Pro Ser Pro Glu Val Val Arg Lys Met Gly Asp Lys Val Glu Ala Arg  
145 150 155 160

Ala Ile Ala Ile Ala Ala Gly Phe Thr Val Pro Val Val Pro Gly Thr  
165 170 175

Asp Ala Pro Ile Thr Ser Leu His Glu Ala His Glu Phe Ser Asn Thr  
180 185 190

Tyr Gly Phe Pro Ile Ile Phe Lys Ala Ala Tyr Gly Gly Gly Gly Arg  
195 200 205

Gly Met Arg Val Val His Ser Tyr Glu Glu Leu Glu Glu Asn Tyr Thr  
210 215 220

Arg Ala Tyr Ser Phe Thr Glu Ala Leu Ala Ala Phe Gly Asn Gly Ala  
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485

490

495

Ile Asp Glu Asn Pro Glu Leu Phe Gln Leu Arg Pro Ala Gln Asn Arg  
 500 505 510

Ala Gln Lys Leu Leu His Tyr Leu Gly His Val Met Val Asn Gly Pro  
 515 520 525

Thr Thr Pro Ile Pro Phe Thr Val Lys Ala Ser Pro Ser Pro Thr Asp  
 530 535 540

Pro Val Val Pro Ala Val Pro Ile Gly Pro Pro Pro Ala Gly Phe Arg  
 545 550 555 560

Asp Ile Leu Leu Arg Glu Gly Pro Glu Gly Phe Ala Arg Ala Val Arg  
 565 570 575

Asn His Pro Gly Leu Leu Leu Met Asp Thr Thr Phe Arg Asp Ala His  
 580 585 590

Gln Ser Phe Thr Leu Leu Ala Thr Arg Val Arg Thr His Asp Leu Lys  
 595 600 605

Lys Ile Ala Pro Tyr Val Ala His Asn Phe Ser Lys Leu Phe Ser Met  
 610 615 620

Glu Asn Trp Gly Gly Ala Thr Phe Asp Val Ala Met Arg Phe Leu Tyr  
 625 630 635 640

Glu Cys Pro Trp Arg Arg Leu Gln Glu Leu Arg Glu Leu Ile Pro Phe  
 645 650 655

Thr Asn Ile Pro Phe Gln Met Leu Leu Arg Gly Ala Asn Ala Val Gly  
 660 665 670

Tyr Thr Asn Tyr Pro Asp Asn Val Val Phe Lys Phe Cys Glu Val Ala  
 675 680 685

Lys Glu Asn Gly Met Asp Val Phe Arg Val Phe Asp Ser Leu Asn Tyr  
 690 695 700

Leu Pro Asn Met Leu Leu Gly Met Glu Ala Ala Gly Phe Thr Ser Ala  
 705 710 715 720

Gly Gly Val Val Glu Ala Ala Ile Ser Tyr Thr Gly Asp Val Ala Asp  
 725 730 735

Pro Ser Arg Thr Lys Tyr Ser Leu Gln Tyr Tyr Met Gly Leu Ala Glu  
 Page 151

750

Glu Pro Phe Arg Ser Lys Val Leu Lys Asp Leu Pro Arg Val Glu Gly  
Page 152

995					1000					1005				
Arg	Pro	Gly	Ala	Ser	Leu	Pro	Pro	Leu	Asp	Leu	Gln	Ala	Phe	Thr
	1010					1015					1020			
Leu	Glu	Lys	Glu	Leu	Val	Asp	Arg	His	Gly	Glu	Glu	Val	Thr	Pro
	1025					1030					1035			
Glu	Asp	Val	Leu	Ser	Ala	Ala	Met	Tyr	Pro	Asp	Val	Phe	Ala	His
	1040					1045					1050			
Phe	Lys	Asp	Phe	Thr	Ala	Thr	Phe	Gly	Pro	Leu	Asp	Ser	Leu	Asn
	1055					1060					1065			
Thr	Arg	Leu	Phe	Leu	Gln	Gly	Pro	Lys	Ile	Ala	Glu	Glu	Phe	Phe
	1070					1075					1080			
Thr	Glu	Val	Glu	Leu	Glu	Arg	Gly	Lys	Thr	Leu	His	Ile	Lys	Ala
	1085					1090					1095			
Leu	Ala	Val	Ser	Asp	Leu	Asn	Arg	Ala	Gly	Gln	Arg	Gln	Val	Phe
	1100					1105					1110			
Phe	Glu	Leu	Asn	Gly	Gln	Leu	Arg	Ser	Ile	Leu	Val	Lys	Asp	Thr
	1115					1120					1125			
Gln	Ala	Met	Lys	Glu	Met	His	Phe	His	Pro	Lys	Ala	Leu	Lys	Asp
	1130					1135					1140			
Phe	Thr	Val	Lys	Gly	Gln	Ile	Gly	Ala	Pro	Met	Pro	Gly	Lys	Val
	1145					1150					1155			
Ile	Asp	Ile	Lys	Val	Val	Ala	Gly	Ala	Lys	Val	Ala	Lys	Gly	Gln
	1160					1165					1170			
Pro	Leu	Cys	Val	Leu	Ser	Ala	Met	Lys	Met	Glu	Thr	Val	Val	Thr
	1175					1180					1185			
Ser	Pro	Met	Glu	Gly	Thr	Val	Arg	Lys	Val	His	Val	Thr	Lys	Asp
	1190					1195					1200			
Met	Phe	Thr	Thr	Leu	Glu	Gly	Asp	Asp	Leu	Ile	Leu	Glu	Ile	Glu
	1205					1210					1215			

<210> 82  
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 <213> Homo sapiens

<400> 82

Met Ala Phe Val Thr Arg Gln Phe Met Arg Ser Val Ser Ser Ser Ser  
1 5 10 15

Thr Ala Ser Ala Ser Ala Lys Lys Ile Ile Val Lys His Val Thr Val  
20 25 30

Ile Gly Gly Gly Leu Met Gly Ala Gly Ile Ala Gln Val Phe Thr Ala  
35 40 45

Ala Ala Thr Gly His Thr Val Val Leu Val Asp Gln Thr Glu Asp Ile  
50 55 60

Leu Ala Lys Ser Lys Lys Gly Ile Glu Glu Ser Leu Arg Lys Val Ala  
65 70 75 80

Lys Lys Lys Phe Ala Glu Asn Pro Lys Ala Gly Asp Glu Phe Val Glu  
85 90 95

Lys Thr Leu Ser Thr Ile Ala Thr Ser Phe Thr Thr Asp Ala Ala Ser  
100 105 110

Val Val His Ser Thr Asp Leu Val Val Glu Ala Ile Val Glu Asn Leu  
115 120 125

Lys Val Lys Asn Glu Leu Phe Lys Arg Leu Asp Lys Phe Ala Ala Glu  
130 135 140

His Thr Ile Phe Ala Ser Asn Thr Ser Ser Leu His Ile Thr Ser Ile  
145 150 155 160

Ala Asn Ala Thr Thr Arg Gln Phe Thr Asp Arg Phe Ala Gly Leu His  
165 170 175

Phe Phe Asn Pro Val Pro Val Met Lys Leu Val Glu Val Ile Lys Thr  
180 185 190

Pro Met Thr Ser Gln Lys Thr Phe Glu Ser Leu Val Asp Phe Ser Lys  
195 200 205

Ala Leu Gly Lys His Pro Val Ser Cys Lys Asp Thr Pro Gly Phe Ile  
210 215 220

Val Asn Arg Leu Phe Thr Leu Val Pro Tyr Leu Met Glu Ala Ile Arg  
225 230 235 240

Leu Tyr Glu Arg Gly Asp Ala Ser Lys Glu Asp Ile Asp Thr Ala Met  
245 250 255

Lys Leu Gly Ala Gly Tyr Pro Met Gly Pro Phe Glu Leu Leu Asp Tyr  
260 265 270

Val Gly Leu Asp Thr Thr Lys Phe Ile Val Asp Gly Trp His Glu Met  
275 280 285

Asp Phe Thr Ala Glu Asn Pro Leu His Gln Pro Ser Pro Ser Leu Asn  
290 295 300

Lys Leu Val Ala Glu Asn Lys Phe Gly Lys Lys Thr Gly Glu Gly Phe  
305 310 315 320

Tyr Lys Tyr Lys

<210> 83  
<211> 228  
<212> PRT  
<213> Homo sapiens

<400> 83

Met Ala Ser Lys Leu Leu Arg Ala Val Ile Leu Gly Pro Pro Gly Ser  
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Gly Lys Gly Thr Val Cys Gln Arg Ile Ala Gln Asn Phe Gly Leu Gln  
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His Leu Ser Ser Gly His Phe Leu Arg Glu Asn Ile Lys Phe Thr Ala  
35 40 45

Ser Thr Glu Val Glu Gly Met Ala Lys Gln Tyr Ile Glu Lys Ser Leu  
50 55 60

Leu Val Pro Asp His Val Ile Thr Arg Leu Met Met Ser Glu Leu Glu  
65 70 75 80

Asn Arg Arg Gly Gln His Trp Leu Leu Asp Gly Phe Pro Arg Thr Leu  
85 90 95

Gly Gln Ala Glu Ala Leu Asp Lys Ile Cys Phe Thr Glu Val Asp Leu  
100 105 110

Val Ile Ser Leu Asn Ile Pro Phe Glu Thr Leu Lys Asp Arg Leu Ser  
115 120 125

Arg Arg Trp Ile His Pro Pro Ser Gly Arg Val Tyr Asn Leu Asp Phe  
130 135 140

Asn Pro Pro His Val His Gly Ile Asp Asp Val Thr Gly Glu Pro Leu  
 145 150 155 160

Val Gln Gln Glu Asp Asp Lys Phe Thr Pro Glu Ala Val Ala Ala Arg  
 165 170 175

Leu Arg Gln Tyr Lys Asp Val Ala Lys Pro Val Ile Glu Leu Tyr Lys  
 180 185 190

Ser Arg Gly Val Leu His Gln Phe Ser Gly Thr Glu Thr Asn Lys Ile  
 195 200 205

Trp Pro Tyr Val Tyr Thr Leu Phe Ser Asn Lys Ile Thr Pro Ile Gln  
 210 215 220

Ser Lys Glu Ala  
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<210> 84  
 <211> 866  
 <212> PRT  
 <213> Homo sapiens

<400> 84

Met Leu Arg Pro Gly Ala Gln Leu Leu Arg Gly Leu Leu Leu Arg Ser  
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Cys Pro Leu Gln Gly Ser Pro Gly Arg Pro Arg Ser Val Cys Gly Arg  
 20 25 30

Glu Gly Glu Glu Lys Pro Pro Leu Ser Ala Glu Thr Gln Trp Lys Asp  
 35 40 45

Arg Ala Glu Thr Val Ile Ile Gly Gly Gly Cys Val Gly Val Ser Leu  
 50 55 60

Ala Tyr His Leu Ala Lys Ala Gly Met Lys Asp Val Val Leu Leu Glu  
 65 70 75 80

Lys Ser Glu Leu Thr Ala Gly Ser Thr Trp His Ala Ala Gly Leu Thr  
 85 90 95

Thr Tyr Phe His Pro Gly Ile Asn Leu Lys Lys Ile His Tyr Asp Ser  
 100 105 110

Ile Lys Leu Tyr Glu Lys Leu Glu Glu Thr Gly Gln Val Val Gly  
 115 120 125



Phe His Gln Pro Gly Ser Ile Arg Leu Ala Thr Thr Pro Val Arg Val  
 130 135 140

Asp Glu Phe Lys Tyr Gln Met Thr Arg Thr Gly Trp His Ala Thr Glu  
 145 150 155 160

Gln Tyr Leu Ile Glu Pro Glu Lys Ile Gln Glu Met Phe Pro Leu Leu  
 165 170 175

Asn Met Asn Lys Val Leu Ala Gly Leu Tyr Asn Pro Gly Asp Gly His  
 180 185 190

Ile Asp Pro Tyr Ser Leu Thr Met Ala Leu Ala Ala Gly Ala Arg Lys  
 195 200 205

Cys Gly Ala Leu Leu Lys Tyr Pro Ala Pro Val Thr Ser Leu Lys Ala  
 210 215 220

Arg Ser Asp Gly Thr Trp Asp Val Glu Thr Pro Gln Gly Ser Met Arg  
 225 230 235 240

Ala Asn Arg Ile Val Asn Ala Ala Gly Phe Trp Ala Arg Glu Val Gly  
 245 250 255

Lys Met Ile Gly Leu Glu His Pro Leu Ile Pro Val Gln His Gln Tyr  
 260 265 270

Val Val Thr Ser Thr Ile Ser Glu Val Lys Ala Leu Lys Arg Glu Leu  
 275 280 285

Pro Val Leu Arg Asp Leu Glu Gly Ser Tyr Tyr Leu Arg Gln Glu Arg  
 290 295 300

Asp Gly Leu Leu Phe Gly Pro Tyr Glu Ser Gln Glu Lys Met Lys Val  
 305 310 315 320

Gln Asp Ser Trp Val Thr Asn Gly Val Pro Pro Gly Phe Gly Lys Glu  
 325 330 335

Leu Phe Glu Ser Asp Leu Asp Arg Ile Met Glu His Ile Lys Ala Ala  
 340 345 350

Met Glu Met Val Pro Val Leu Lys Lys Ala Asp Ile Ile Asn Val Val  
 355 360 365

Asn Gly Pro Ile Thr Tyr Ser Pro Asp Ile Leu Pro Met Val Gly Pro  
 370 375 380

His Gln Gly Val Arg Asn Tyr Trp Val Ala Ile Gly Phe Gly Tyr Gly  
 385 390 395 400  
 Ile Ile His Ala Gly Gly Val Gly Lys Tyr Leu Ser Asp Trp Ile Leu  
 405 410 415  
 His Gly Glu Pro Pro Phe Asp Leu Ile Glu Leu Asp Pro Asn Arg Tyr  
 420 425 430  
 Gly Lys Trp Thr Thr Thr Gln Tyr Thr Glu Ala Lys Ala Arg Glu Ser  
 435 440 445  
 Tyr Gly Phe Asn Asn Ile Val Gly Tyr Pro Lys Glu Glu Arg Phe Ala  
 450 455 460  
 Gly Arg Pro Thr Gln Arg Val Ser Gly Leu Tyr Gln Arg Leu Glu Ser  
 465 470 475 480  
 Lys Cys Ser Met Gly Phe His Ala Gly Trp Glu Gln Pro His Trp Phe  
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 Tyr Lys Pro Gly Gln Asp Thr Gln Tyr Arg Pro Ser Phe Arg Arg Thr  
 500 505 510  
 Asn Trp Phe Glu Pro Val Gly Ser Glu Tyr Lys Gln Val Met Gln Arg  
 515 520 525  
 Val Gly Val Thr Asp Leu Ser Pro Phe Gly Lys Phe Asn Ile Lys Gly  
 530 535 540  
 Gln Asp Ser Ile Arg Leu Leu Asp His Leu Phe Ala Asn Val Ile Pro  
 545 550 555 560  
 Lys Val Gly Phe Thr Asn Ile Ser His Met Leu Thr Pro Lys Gly Arg  
 565 570 575  
 Val Tyr Ala Glu Leu Thr Val Ser His Gln Ser Pro Gly Glu Phe Leu  
 580 585 590  
 Leu Ile Thr Gly Ser Gly Ser Glu Leu His Asp Leu Arg Trp Ile Glu  
 595 600 605  
 Glu Glu Ala Val Lys Gly Gly Tyr Asp Val Glu Ile Lys Asn Ile Thr  
 610 615 620  
 Asp Glu Leu Gly Val Leu Gly Val Ala Gly Pro Gln Ala Arg Lys Val  
 625 630 635 640

Leu Gln Lys Leu Thr Pro Glu Asp Leu Ser Asp Asp Val Phe Lys Phe  
645 650 655

Leu Gln Thr Lys Ser Leu Lys Val Ser Asn Ile Pro Val Thr Ala Ile  
660 665 670

Arg Ile Ser Tyr Thr Gly Glu Leu Gly Trp Glu Leu Tyr His Arg Arg  
675 680 685

Glu Asp Ser Val Ala Leu Tyr Asp Ala Ile Met Asn Ala Gly Gln Glu  
690 695 700

Glu Gly Ile Asp Asn Phe Gly Thr Tyr Ala Met Asn Ala Leu Arg Leu  
705 710 715 720

Glu Lys Ala Phe Arg Ala Trp Gly Leu Glu Met Asn Cys Asp Thr Asn  
725 730 735

Pro Leu Glu Ala Gly Leu Glu Tyr Phe Val Lys Leu Asn Lys Pro Ala  
740 745 750

Asp Phe Ile Gly Lys Gln Ala Leu Lys Gln Ile Lys Ala Lys Gly Leu  
755 760 765

Lys Arg Arg Leu Val Cys Leu Thr Leu Ala Thr Asp Asp Val Asp Pro  
770 775 780

Glu Gly Asn Glu Ser Ile Trp Tyr Asn Gly Lys Val Val Gly Asn Thr  
785 790 795 800

Thr Ser Gly Ser Tyr Ser Tyr Ser Ile Gln Lys Ser Leu Ala Phe Ala  
805 810 815

Tyr Val Pro Val Gln Leu Ser Glu Val Gly Gln Gln Val Glu Val Glu  
820 825 830

Leu Leu Gly Lys Asn Tyr Pro Ala Val Ile Ile Gln Glu Pro Leu Val  
835 840 845

Leu Thr Glu Pro Thr Arg Asn Arg Leu Gln Lys Lys Gly Gly Lys Asp  
850 855 860

Lys Thr  
865

<210> 85  
<211> 338  
<212> PRT  
<213> Homo sapiens

<400> 85

Met Leu Ser Ala Leu Ala Arg Pro Val Ser Ala Ala Leu Arg Arg Ser  
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Phe Ser Thr Ser Ala Gln Asn Asn Ala Lys Val Ala Val Leu Gly Ala  
20 25 30

Ser Gly Gly Ile Gly Gln Pro Leu Ser Leu Leu Leu Lys Asn Ser Pro  
35 40 45

Leu Val Ser Arg Leu Thr Leu Tyr Asp Ile Ala His Thr Pro Gly Val  
50 55 60

Ala Ala Asp Leu Ser His Ile Glu Thr Lys Ala Ala Val Lys Gly Tyr  
65 70 75 80

Leu Gly Pro Glu Gln Leu Pro Asp Cys Leu Lys Gly Cys Asp Val Val  
85 90 95

Val Ile Pro Ala Gly Val Pro Arg Lys Pro Gly Met Thr Arg Asp Asp  
100 105 110

Leu Phe Asn Thr Asn Ala Thr Ile Val Ala Thr Leu Thr Ala Ala Cys  
115 120 125

Ala Gln His Cys Pro Glu Ala Met Ile Cys Val Ile Ala Asn Pro Val  
130 135 140

Asn Ser Thr Ile Pro Ile Thr Ala Glu Val Phe Lys Lys His Gly Val  
145 150 155 160

Tyr Asn Pro Asn Lys Ile Phe Gly Val Thr Thr Leu Asp Ile Val Arg  
165 170 175

Ala Asn Thr Phe Val Ala Glu Leu Lys Gly Leu Asp Pro Ala Arg Val  
180 185 190

Asn Val Pro Val Ile Gly Gly His Ala Gly Lys Thr Ile Ile Pro Leu  
195 200 205

Ile Ser Gln Cys Thr Pro Lys Val Asp Phe Pro Gln Asp Gln Leu Thr  
210 215 220

Ala Leu Thr Gly Arg Ile Gln Glu Ala Gly Thr Glu Val Val Lys Ala  
225 230 235 240

Lys Ala Gly Ala Gly Ser Ala Thr Leu Ser Met Ala Tyr Ala Gly Ala  
Page 160

245 250 255  
 Arg Phe Val Phe Ser Leu Val Asp Ala Met Asn Gly Lys Glu Gly Val  
 260 265 270  
 Val Glu Cys Ser Phe Val Lys Ser Gln Glu Thr Glu Cys Thr Tyr Phe  
 275 280 285  
 Ser Thr Pro Leu Leu Leu Gly Lys Lys Gly Ile Glu Lys Asn Leu Gly  
 290 295 300  
 Ile Gly Lys Val Ser Ser Phe Glu Glu Lys Met Ile Ser Asp Ala Ile  
 305 310 315 320  
 Pro Glu Leu Lys Ala Ser Ile Lys Lys Gly Glu Asp Phe Val Lys Thr  
 325 330 335  
 Leu Lys

<210> 86  
 <211> 505  
 <212> PRT  
 <213> Homo sapiens

<400> 86

Met Ala Ala Ala Ala Ala Arg Val Val Leu Ser Ser Ala Ala Arg Arg  
 1 5 10 15  
 Arg Leu Trp Gly Phe Ser Glu Ser Leu Leu Ile Arg Gly Ala Ala Gly  
 20 25 30  
 Arg Ser Leu Tyr Phe Gly Glu Asn Arg Leu Arg Ser Thr Phe Thr Gln  
 35 40 45  
 Ala Ala Thr Gln Val Val Leu Asn Val Pro Glu Thr Arg Val Thr Cys  
 50 55 60  
 Leu Glu Ser Gly Leu Arg Val Ala Ser Glu Asp Ser Gly Leu Ser Thr  
 65 70 75 80  
 Cys Thr Val Gly Leu Trp Ile Asp Ala Gly Ser Arg Tyr Glu Asn Glu  
 85 90 95  
 Lys Asn Asn Gly Thr Ala His Phe Leu Glu Phe Thr His Met Ala Phe  
 100 105 110  
 Lys Gly Thr Lys Lys Arg Ser Gln Leu Asp Leu Glu Leu Glu Ile Glu  
 115 120 125

Asn Met Gly Ala His Leu Asn Ala Tyr Thr Ser Arg Glu Gln Thr Val  
 130 135 140  
 Tyr Tyr Ala Lys Ala Phe Ser Lys Asp Leu Pro Arg Ala Val Glu Ile  
 145 150 155 160  
 Leu Ala Asp Ile Ile Gln Asn Phe Thr Ser Thr Leu Gly Glu Ala Glu  
 165 170 175  
 Ile Glu Arg Glu Arg Gly Val Ile Leu Arg Glu Met Gln Glu Val Glu  
 180 185 190  
 Thr Asn Leu Gln Glu Val Val Phe Asp Tyr Leu His Ala Thr Ala Tyr  
 195 200 205  
 Gln Asn Thr Ala Leu Gly Arg Thr Ile Leu Gly Pro Thr Glu Asn Ile  
 210 215 220  
 Lys Ser Ile Ser Phe Thr Arg Lys Asp Leu Val Asp Tyr Ile Thr Thr  
 225 230 235 240  
 His Tyr Lys Gly Pro Arg Ile Val Leu Ala Ala Ala Gly Gly Val Ser  
 245 250 255  
 His Asp Glu Leu Leu Asp Leu Ala Lys Phe His Phe Gly Asp Ser Leu  
 260 265 270  
 Cys Thr His Lys Gly Glu Ile Pro Ala Leu Pro Pro Cys Lys Phe Thr  
 275 280 285  
 Gly Phe Thr Ser Glu Ile Arg Val Arg Asp Asp Lys Met Pro Leu Ala  
 290 295 300  
 His Leu Ala Ile Ala Val Glu Ala Val Gly Trp Ala His Pro Asp Thr  
 305 310 315 320  
 Ile Cys Leu Met Val Ala Asn Thr Leu Ile Gly Asn Trp Asp Arg Ser  
 325 330 335  
 Phe Gly Gly Gly Met Asn Leu Ser Ser Lys Leu Ala Gln Leu Phe Thr  
 340 345 350  
 Thr Cys His Gly Asn Leu Cys His Ser Phe Gln Ser Phe Asn Thr Ser  
 355 360 365  
 Tyr Thr Asp Thr Gly Leu Trp Gly Leu Tyr Met Val Cys Glu Ser Ser  
 370 375 380

Thr Val Ala Asp Met Leu His Val Val Gln Lys Glu Trp Met Arg Leu  
385 390 395 400

Cys Thr Ser Val Thr Glu Ser Glu Val Ala Arg Phe Thr Ala Arg Asn  
405 410 415

Leu Leu Lys Thr Asn Met Leu Leu Gln Leu Asp Gly Ser Thr Pro Ile  
420 425 430

Cys Glu Asp Ile Gly Arg Gln Met Leu Cys Tyr Asn Arg Arg Ile Pro  
435 440 445

Ile Pro Glu Leu Glu Ala Arg Ile Asp Ala Val Asn Ala Glu Thr Ile  
450 455 460

Arg Glu Val Cys Thr Lys Tyr Ile Phe Thr Tyr Asn Arg Ser Pro Ala  
465 470 475 480

Ile Ala Ala Val Gly Pro Ile Lys Gln Leu Pro Asp Phe Lys Gln Ile  
485 490 495

Arg Ser Asn Met Cys Trp Leu Arg Asp  
500 505

<210> 87  
<211> 130  
<212> PRT  
<213> Mus musculus

<400> 87

Val Val Asn Cys Ser Thr Pro Gly Asn Phe Phe His Val Leu Arg Arg  
1 5 10 15

Gln Ile Leu Leu Pro Phe Arg Lys Pro Leu Ile Val Phe Thr Pro Lys  
20 25 30

Ser Leu Leu Arg His Pro Glu Ala Arg Thr Ser Phe Asp Glu Met Leu  
35 40 45

Pro Gly Thr His Phe Gln Arg Val Ile Pro Glu Asn Gly Pro Ala Ala  
50 55 60

Gln Asp Pro His Lys Val Lys Arg Leu Leu Phe Cys Thr Gly Lys Val  
65 70 75 80

Tyr Tyr Asp Leu Thr Arg Glu Arg Lys Ala Arg Asn Met Glu Glu Glu  
85 90 95

Val Ala Ile Thr Arg Ile Glu Gln Leu Ser Pro Phe Pro Phe Asp Leu  
100 105 110

Leu Leu Lys Glu Ala Gln Lys Tyr Pro Asn Ala Glu Leu Ala Trp Cys  
115 120 125

Gln Glu  
130

<210> 88  
<211> 397  
<212> PRT  
<213> *Caenorhabditis elegans*

<400> 88

Met Ser Leu Phe Ala Arg Gln Leu Gln Ser Leu Thr Ala Ser Gly Ile  
1 5 10 15

Arg Thr Gln Gln Val Arg Leu Ala Ser Thr Glu Val Ser Phe His Thr  
20 25 30

Lys Pro Cys Lys Leu His Lys Leu Asp Asn Gly Pro Asn Thr Ser Val  
35 40 45

Thr Leu Asn Arg Glu Asp Ala Leu Lys Tyr Tyr Arg Asp Met Gln Val  
50 55 60

Ile Arg Arg Met Glu Ser Ala Ala Gly Asn Leu Tyr Lys Glu Lys Lys  
65 70 75 80

Ile Arg Gly Phe Cys His Leu Tyr Ser Gly Gln Glu Ala Cys Ala Val  
85 90 95

Gly Met Lys Ala Ala Met Thr Glu Gly Asp Ala Val Ile Thr Ala Tyr  
100 105 110

Arg Cys His Gly Trp Thr Trp Leu Leu Gly Ala Thr Val Thr Glu Val  
115 120 125

Leu Ala Glu Leu Thr Gly Arg Val Ala Gly Asn Val His Gly Lys Gly  
130 135 140

Gly Ser Met His Met Tyr Thr Lys Asn Phe Tyr Gly Gly Asn Gly Ile  
145 150 155 160

Val Gly Ala Gln Gln Pro Leu Gly Ala Gly Val Ala Leu Ala Met Lys  
165 170 175



Tyr Arg Glu Gln Lys Asn Val Cys Val Thr Leu Tyr Gly Asp Gly Ala  
180 185 190

Ala Asn Gln Gly Gln Leu Phe Glu Ala Thr Asn Met Ala Lys Leu Trp  
195 200 205

Asp Leu Pro Val Leu Phe Val Cys Glu Asn Asn Gly Phe Gly Met Gly  
210 215 220

Thr Thr Ala Glu Arg Ser Ser Ala Ser Thr Glu Tyr Tyr Thr Arg Gly  
225 230 235 240

Asp Tyr Val Pro Gly Ile Trp Val Asp Gly Met Asp Ile Leu Ala Val  
245 250 255

Arg Glu Ala Thr Lys Trp Ala Lys Glu Tyr Cys Asp Ser Gly Lys Gly  
260 265 270

Pro Leu Met Met Glu Met Ala Thr Tyr Arg Tyr His Gly His Ser Met  
275 280 285

Ser Asp Pro Gly Thr Ser Tyr Arg Thr Arg Glu Glu Ile Gln Glu Val  
290 295 300

Arg Lys Thr Arg Asp Pro Ile Thr Gly Phe Lys Asp Arg Ile Ile Thr  
305 310 315 320

Ser Ser Leu Ala Thr Glu Glu Glu Leu Lys Ala Ile Asp Lys Glu Val  
325 330 335

Arg Lys Glu Val Asp Glu Ala Leu Lys Ile Ala Thr Ser Asp Gly Val  
340 345 350

Leu Pro Pro Glu Ala Leu Tyr Ala Asp Ile Tyr His Asn Thr Pro Ala  
355 360 365

Gln Glu Ile Arg Gly Ala Thr Ile Asp Glu Thr Ile Val Gln Pro Phe  
370 375 380

Lys Thr Ser Ala Asp Val Leu Lys Ser Ile Gly Arg Ala  
385 390 395

<210> 89  
<211> 354  
<212> PRT  
<213> Homo sapiens

<400> 89

Met Leu Phe Asn Leu Arg Ile Leu Leu Asn Asn Ala Ala Phe Arg Asn  
Page 165

1	5	10	15
Gly His Asn Phe Met Val Arg Asn Phe Arg Cys Gly Gln Pro Leu Gln	20	25	30
Asn Lys Val Gln Leu Lys Gly Arg Asp Leu Leu Thr Leu Lys Asn Phe	35	40	45
Thr Gly Glu Glu Ile Lys Tyr Met Leu Trp Leu Ser Ala Asp Leu Lys	50	55	60
Phe Arg Ile Lys Gln Lys Gly Glu Tyr Leu Pro Leu Leu Gln Gly Lys	65	70	75
Ser Leu Gly Met Ile Phe Glu Lys Arg Ser Thr Arg Thr Arg Leu Ser	85	90	95
Thr Glu Thr Gly Phe Ala Leu Leu Gly Gly His Pro Cys Phe Leu Thr	100	105	110
Thr Gln Asp Ile His Leu Gly Val Asn Glu Ser Leu Thr Asp Thr Ala	115	120	125
Arg Val Leu Ser Ser Met Ala Asp Ala Val Leu Ala Arg Val Tyr Lys	130	135	140
Gln Ser Asp Leu Asp Thr Leu Ala Lys Glu Ala Ser Ile Pro Ile Ile	145	150	155
Asn Gly Leu Ser Asp Leu Tyr His Pro Ile Gln Ile Leu Ala Asp Tyr	165	170	175
Leu Thr Leu Gln Glu His Tyr Ser Ser Leu Lys Gly Leu Thr Leu Ser	180	185	190
Trp Ile Gly Asp Gly Asn Asn Ile Leu His Ser Ile Met Met Ser Ala	195	200	205
Ala Lys Phe Gly Met His Leu Gln Ala Ala Thr Pro Lys Gly Tyr Glu	210	215	220
Pro Asp Ala Ser Val Thr Lys Leu Ala Glu Gln Tyr Ala Lys Glu Asn	225	230	235
Gly Thr Lys Leu Leu Leu Thr Asn Asp Pro Leu Glu Ala Ala His Gly	245	250	255
Gly Asn Val Leu Ile Thr Asp Thr Trp Ile Ser Met Gly Gln Glu Glu			

260                      265                      270  
 Glu Lys Lys Lys Arg Leu Gln Ala Phe Gln Gly Tyr Gln Val Thr Met  
           275                                      280                                      285  
 Lys Thr Ala Lys Val Ala Ala Ser Asp Trp Thr Phe Leu His Cys Leu  
           290                                      295                                      300  
 Pro Arg Lys Pro Glu Glu Val Asp Asp Glu Val Phe Tyr Ser Pro Arg  
 305                                      310                                      315                                      320  
 Ser Leu Val Phe Pro Glu Ala Glu Asn Arg Lys Trp Thr Ile Met Ala  
                                     325                                      330                                      335  
 Val Met Val Ser Leu Leu Thr Asp Tyr Ser Pro Gln Leu Gln Lys Pro  
                                     340                                      345                                      350  
 Lys Phe

<210> 90  
 <211> 366  
 <212> PRT  
 <213> Mus musculus

<400> 90

Met Leu Ser Asn Leu Arg Ile Leu Leu Asn Asn Ala Ala Leu Arg Lys  
 1                                      5                                      10                                      15  
 Gly His Thr Ser Val Val Arg His Phe Trp Cys Gly Lys Pro Val Gln  
                                     20                                      25                                      30  
 Ser Gln Val Gln Leu Lys Gly Arg Asp Leu Leu Thr Leu Phe Thr Lys  
                                     35                                      40                                      45  
 Asn Phe Thr Gly Glu Glu Ile Gln Tyr Met Leu Trp Leu Ser Ala Asp  
                                     50                                      55                                      60  
 Leu Lys Phe Arg Ile Lys Gln Lys Gly Glu Tyr Leu Pro Leu Leu Gln  
 65                                      70                                      75                                      80  
 Gly Lys Ser Leu Gly Met Ile Phe Glu Lys Arg Ser Thr Arg Thr Arg  
                                     85                                      90                                      95  
 Leu Ser Thr Glu Thr Gly Phe Ala Leu Leu Phe Thr Gly Gly His Pro  
                                     100                                      105                                      110  
 Ser Phe Leu Thr Thr Gln Asp Ile His Leu Gly Val Asn Glu Ser Leu  
                                     115                                      120                                      125

Thr Asp Thr Ala Arg Val Leu Ser Ser Met Thr Asp Ala Val Leu Ala  
 130 135 140  
 Arg Val Tyr Lys Gln Ser Asp Leu Asp Thr Leu Ala Lys Glu Ala Ser  
 145 150 155 160  
 Ile Pro Ile Val Asn Gly Leu Phe Thr Ser Asp Leu Tyr His Pro Ile  
 165 170 175  
 Gln Ile Leu Ala Asp Tyr Leu Thr Leu Gln Glu His Tyr Gly Ser Leu  
 180 185 190  
 Lys Gly Leu Thr Leu Ser Trp Ile Arg Asp Gly Asn Asn Ile Leu His  
 195 200 205  
 Ser Ile Met Met Ser Ala Ala Lys Phe Gly Met His Leu Gln Ala Ala  
 210 215 220  
 Thr Pro Lys Gly Phe Thr Tyr Glu Pro Asp Pro Asn Ile Val Lys Leu  
 225 230 235 240  
 Ala Glu Gln Tyr Ala Lys Glu Asn Gly Thr Lys Leu Ser Met Thr Asn  
 245 250 255  
 Asp Pro Leu Glu Ala Ala Arg Gly Gly Asn Val Leu Ile Thr Asp Thr  
 260 265 270  
 Trp Ile Ser Met Gly Gln Glu Asp Glu Lys Lys Lys Arg Leu Gln Ala  
 275 280 285  
 Phe Phe Thr Gln Gly Tyr Gln Val Thr Met Lys Thr Ala Lys Val Ala  
 290 295 300  
 Ala Ser Asp Trp Thr Phe Leu His Cys Leu Pro Arg Lys Pro Glu Glu  
 305 310 315 320  
 Val Asp Asp Glu Val Phe Tyr Ser Pro Arg Ser Leu Val Phe Pro Glu  
 325 330 335  
 Ala Glu Asn Arg Lys Trp Thr Ile Met Ala Val Met Val Ser Phe Thr  
 340 345 350  
 Leu Leu Thr Asp Tyr Ser Pro Val Leu Gln Lys Pro Lys Phe  
 355 360 365

<210> 91  
 <211> 392

<212> PRT  
<213> Homo sapiens

<400> 91

Met Ala Ser His Lys Leu Leu Val Thr Pro Pro Lys Ala Leu Leu Lys  
1 5 10 15  
Pro Leu Ser Ile Pro Asn Gln Leu Leu Leu Gly Pro Gly Pro Ser Asn  
20 25 30  
Leu Pro Pro Arg Ile Met Ala Ala Gly Gly Leu Gln Met Ile Gly Ser  
35 40 45  
Met Ser Lys Asp Met Tyr Gln Ile Met Asp Glu Ile Lys Glu Gly Ile  
50 55 60  
Gln Tyr Val Phe Gln Thr Arg Asn Pro Leu Thr Leu Val Ile Ser Gly  
65 70 75 80  
Ser Gly His Cys Ala Leu Glu Ala Ala Leu Val Asn Val Leu Glu Pro  
85 90 95  
Gly Asp Ser Phe Leu Val Gly Ala Asn Gly Ile Trp Gly Gln Arg Ala  
100 105 110  
Val Asp Ile Gly Glu Arg Ile Gly Ala Arg Val His Pro Met Thr Lys  
115 120 125  
Asp Pro Gly Gly His Tyr Thr Leu Gln Glu Val Glu Glu Gly Leu Ala  
130 135 140  
Gln His Lys Pro Val Leu Leu Phe Leu Thr His Gly Glu Ser Ser Thr  
145 150 155 160  
Gly Val Leu Gln Pro Leu Asp Gly Phe Gly Glu Leu Cys His Arg Tyr  
165 170 175  
Lys Cys Leu Leu Leu Val Asp Ser Val Ala Ser Leu Gly Gly Thr Pro  
180 185 190  
Leu Tyr Met Asp Arg Gln Gly Ile Asp Ile Leu Tyr Ser Gly Ser Gln  
195 200 205  
Lys Ala Leu Asn Ala Pro Pro Gly Thr Ser Leu Ile Ser Phe Ser Asp  
210 215 220  
Lys Ala Lys Lys Lys Met Tyr Ser Arg Lys Thr Lys Pro Phe Ser Phe  
225 230 235 240

Tyr Leu Asp Ile Lys Trp Leu Ala Asn Phe Trp Gly Cys Asp Asp Gln  
245 250 255

Pro Arg Met Tyr His His Thr Ile Pro Val Ile Ser Leu Tyr Ser Leu  
260 265 270

Arg Glu Ser Leu Ala Leu Ile Ala Glu Gln Gly Leu Glu Asn Ser Trp  
275 280 285

Arg Gln His Arg Glu Ala Ala Tyr Leu His Gly Arg Leu Gln Ala  
290 295 300

Leu Gly Leu Gln Leu Phe Val Lys Asp Pro Ala Leu Arg Leu Pro Thr  
305 310 315 320

Val Thr Thr Val Ala Val Pro Ala Gly Tyr Asp Trp Arg Asp Ile Val  
325 330 335

Ser Tyr Val Ile Asp His Phe Asp Ile Glu Ile Met Gly Gly Leu Gly  
340 345 350

Pro Ser Thr Gly Lys Val Leu Arg Ile Gly Leu Leu Gly Cys Asn Ala  
355 360 365

Thr Arg Glu Asn Val Asp Arg Val Thr Glu Ala Leu Arg Ala Ala Leu  
370 375 380

Gln His Cys Pro Lys Lys Lys Leu  
385 390

<210> 92  
<211> 563  
<212> PRT  
<213> Homo sapiens

<400> 92

Met Leu Leu Pro Ala Pro Ala Leu Arg Arg Ala Leu Leu Ser Arg Pro  
1 5 10 15

Trp Thr Gly Ala Gly Leu Arg Trp Lys His Thr Ser Ser Leu Lys Val  
20 25 30

Ala Asn Glu Pro Val Leu Ala Phe Thr Gln Gly Ser Pro Glu Arg Asp  
35 40 45

Ala Leu Gln Lys Ala Leu Lys Asp Leu Lys Gly Arg Met Glu Ala Ile  
50 55 60

Pro Cys Val Val Gly Asp Glu Glu Val Trp Thr Ser Asp Val Gln Tyr  
 65 70 75 80  
 Gln Val Ser Pro Phe Asn His Gly His Lys Val Ala Lys Phe Cys Tyr  
 85 90 95  
 Ala Asp Lys Ser Leu Leu Asn Lys Ala Ile Glu Ala Ala Leu Ala Ala  
 100 105 110  
 Arg Lys Glu Trp Asp Leu Lys Pro Ile Ala Asp Arg Ala Gln Ile Phe  
 115 120 125  
 Leu Lys Ala Ala Asp Met Leu Ser Gly Pro Arg Arg Ala Glu Ile Leu  
 130 135 140  
 Ala Lys Thr Met Val Gly Gln Gly Lys Thr Val Ile Gln Ala Glu Ile  
 145 150 155 160  
 Asp Ala Ala Ala Glu Leu Ile Asp Phe Phe Arg Phe Asn Ala Lys Tyr  
 165 170 175  
 Ala Val Glu Leu Glu Gly Gln Gln Pro Ile Ser Val Pro Pro Ser Thr  
 180 185 190  
 Asn Ser Thr Val Tyr Arg Gly Leu Glu Gly Phe Val Ala Ala Ile Ser  
 195 200 205  
 Pro Phe Asn Phe Thr Ala Ile Gly Gly Asn Leu Ala Gly Ala Pro Ala  
 210 215 220  
 Leu Met Gly Asn Val Val Leu Trp Lys Pro Ser Asp Thr Ala Met Leu  
 225 230 235 240  
 Ala Ser Tyr Ala Val Tyr Arg Ile Leu Arg Glu Ala Gly Leu Pro Pro  
 245 250 255  
 Asn Ile Ile Gln Phe Val Pro Ala Asp Gly Pro Leu Phe Gly Asp Thr  
 260 265 270  
 Val Thr Ser Ser Glu His Leu Cys Gly Ile Asn Phe Thr Gly Ser Val  
 275 280 285  
 Pro Thr Phe Lys His Leu Trp Lys Gln Val Ala Gln Asn Leu Asp Arg  
 290 295 300  
 Phe His Thr Phe Pro Arg Leu Ala Gly Glu Cys Gly Gly Lys Asn Phe  
 305 310 315 320

His Phe Val His Arg Ser Ala Asp Val Glu Ser Val Val Ser Gly Thr  
 325 330 335  
 Leu Arg Ser Ala Phe Glu Tyr Gly Gly Gln Lys Cys Ser Ala Cys Ser  
 340 345 350  
 Arg Leu Tyr Val Pro His Ser Leu Trp Pro Gln Ile Lys Gly Arg Leu  
 355 360 365  
 Leu Glu Glu His Ser Arg Ile Lys Val Gly Asp Pro Ala Glu Asp Phe  
 370 375 380  
 Gly Thr Phe Phe Ser Ala Val Ile Asp Ala Lys Ser Phe Ala Arg Ile  
 385 390 395 400  
 Lys Lys Trp Leu Glu His Ala Arg Ser Ser Pro Ser Leu Thr Ile Leu  
 405 410 415  
 Ala Gly Gly Lys Cys Asp Asp Ser Val Gly Tyr Phe Val Glu Pro Cys  
 420 425 430  
 Ile Val Glu Ser Lys Asp Pro Gln Glu Pro Ile Met Lys Glu Glu Ile  
 435 440 445  
 Phe Gly Pro Val Leu Ser Val Tyr Val Tyr Pro Asp Asp Lys Tyr Lys  
 450 455 460  
 Glu Thr Leu Gln Leu Val Asp Ser Thr Thr Ser Tyr Gly Leu Thr Gly  
 465 470 475 480  
 Ala Val Phe Ser Gln Asp Lys Asp Val Val Gln Glu Ala Thr Lys Val  
 485 490 495  
 Leu Arg Asn Ala Ala Gly Asn Phe Tyr Ile Asn Asp Lys Ser Thr Gly  
 500 505 510  
 Ser Ile Val Gly Gln Gln Pro Phe Gly Gly Ala Arg Ala Ser Gly Thr  
 515 520 525  
 Asn Asp Lys Pro Gly Gly Pro His Tyr Ile Leu Arg Trp Thr Ser Pro  
 530 535 540  
 Gln Val Ile Lys Glu Thr His Lys Pro Leu Gly Asp Trp Ser Tyr Ala  
 545 550 555 560  
 Tyr Met Gln



<210> 93  
 <211> 398  
 <212> PRT  
 <213> Saccharomyces cerevisiae

<400> 93

Met Lys Leu Lys Leu Leu Asn Met Ile Leu Ser Met Met Asn Lys Thr  
 1 5 10 15

Asn Asn Asn Asn Asn Ile Ile Ile Asn Asn Thr Leu Asp Ser Leu Met  
 20 25 30

Asn Lys Lys Leu Leu Leu Lys Asn Met Leu Leu Asp Met Asn Asn Lys  
 35 40 45

Lys Met Asn Asn Met Lys Arg Met Leu Asn Asn Asn Asn Met Asn Pro  
 50 55 60

Ala Gly Ala Asn Pro Val Val His Arg Ile Gly Pro Ala Gly Asn Ile  
 65 70 75 80

Asn Asn Lys Leu Gln His Leu Asn Asn Met Asn Asn Trp Asn Thr Gln  
 85 90 95

Ile Tyr Asn Tyr Asn Lys Asn Met Glu Ile Met Asn Thr Met Asn Asp  
 100 105 110

Lys Leu Ile Asn Lys Leu Leu Tyr Lys Met Met Thr Leu Lys Leu Asn  
 115 120 125

Asn Met Asn Ile Asn Lys Ile Ile Met Ser Lys Thr Ile Asn Gln His  
 130 135 140

Ser Leu Asn Lys Leu Asn Ile Lys Phe Tyr Tyr Tyr Asn Asn Asp Ile  
 145 150 155 160

Asn Asn Asn Asn Asn Asn Asn Asn Asn Asn Tyr Tyr Met Asn Met Met  
 165 170 175

Asn Lys Leu Met Asn Ile Met Asn Asn Asn Met Asn Asn Asn Leu Cys  
 180 185 190

Asn Ile Leu Ser Tyr Tyr Tyr Lys Lys Lys Val Thr Ile Glu Pro Ile  
 195 200 205

Lys Leu Ser Tyr Ile Tyr Leu Asn Ser Asp Ile Phe Ser Lys Tyr Ile  
 210 215 220

Ser Leu Asn Asp Met Asp Lys Tyr Asn Asn Gly Ile Leu Thr Asn Tyr  
 Page 173



Phe Glu Thr Lys Val Thr Thr Leu Asp Asn Gly Leu Arg Val Ala Ser  
65 70 75 80

Gln Asn Lys Phe Gly Gln Phe Cys Thr Val Gly Ile Leu Ile Asn Ser  
85 90 95

Gly Ser Arg Tyr Glu Ala Lys Tyr Leu Ser Gly Ile Ala His Phe Leu  
100 105 110

Glu Lys Leu Ala Phe Ser Ser Thr Ala Arg Phe Asp Ser Lys Asp Glu  
115 120 125

Ile Leu Leu Thr Leu Glu Lys His Gly Gly Ile Cys Asp Cys Gln Thr  
130 135 140

Ser Arg Asp Thr Thr Met Tyr Ala Val Ser Ala Asp Ser Lys Gly Leu  
145 150 155 160

Asp Thr Val Val Ala Leu Leu Ala Asp Val Val Leu Gln Pro Arg Leu  
165 170 175

Thr Asp Glu Glu Val Glu Met Thr Arg Met Ala Val Gln Phe Glu Leu  
180 185 190

Glu Asp Leu Asn Leu Arg Pro Asp Pro Glu Pro Leu Leu Thr Glu Met  
195 200 205

Ile His Glu Ala Ala Tyr Arg Glu Asn Thr Val Gly Leu His Arg Phe  
210 215 220

Cys Pro Thr Glu Asn Val Ala Lys Ile Asn Arg Glu Val Leu His Ser  
225 230 235 240

Tyr Leu Arg Asn Tyr Tyr Thr Pro Asp Arg Met Val Leu Ala Gly Val  
245 250 255

Gly Val Glu His Glu His Leu Val Asp Cys Ala Arg Lys Tyr Leu Leu  
260 265 270

Gly Val Gln Pro Ala Trp Gly Ser Ala Glu Ala Val Asp Ile Asp Arg  
275 280 285

Ser Val Ala Gln Tyr Thr Gly Gly Ile Ala Lys Leu Glu Arg Asp Met  
290 295 300

Ser Asn Val Ser Leu Gly Pro Thr Pro Ile Pro Glu Leu Thr His Ile  
305 310 315 320

Met Val Gly Leu Glu Ser Cys Ser Phe Leu Glu Glu Asp Phe Ile Pro  
325 330 335

Phe Ala Val Leu Asn Met Met Met Gly Gly Gly Gly Ser Phe Ser Ala  
340 345 350

Gly Gly Pro Gly Lys Gly Met Phe Ser Arg Leu Tyr Leu Asn Val Leu  
355 360 365

Asn Arg His His Trp Met Tyr Asn Ala Thr Ser Tyr His His Ser Tyr  
370 375 380

Glu Asp Thr Gly Leu Leu Cys Ile His Ala Ser Ala Asp Pro Arg Gln  
385 390 395 400

Val Arg Glu Met Val Glu Ile Ile Thr Lys Glu Phe Ile Leu Met Gly  
405 410 415

Gly Thr Val Asp Thr Val Glu Leu Glu Arg Ala Lys Thr Gln Leu Thr  
420 425 430

Ser Met Leu Met Met Asn Leu Glu Ser Arg Pro Val Ile Phe Glu Asp  
435 440 445

Val Gly Arg Gln Val Leu Ala Thr Arg Ser Arg Lys Leu Pro His Glu  
450 455 460

Leu Cys Thr Leu Ile Arg Asn Val Lys Pro Glu Asp Val Lys Arg Val  
465 470 475 480

Ala Ser Lys Met Leu Arg Gly Lys Pro Ala Val Ala Ala Leu Gly Asp  
485 490 495

Leu Thr Asp Leu Pro Thr Tyr Glu His Ile Gln Thr Ala Leu Ser Ser  
500 505 510

Lys Asp Gly Arg Leu Pro Arg Thr Tyr Arg Leu Phe Arg  
515 520 525

<210> 95  
<211> 411  
<212> PRT  
<213> Homo sapiens

<400> 95

Met Lys Ala Ala Arg Phe Val Leu Arg Ser Ala Gly Ser Leu Asn Gly  
1 5 10 15

Ala Gly Leu Val Pro Arg Glu Val Glu His Phe Ser Arg Tyr Ser Pro  
 20 25 30  
 Ser Pro Leu Ser Met Lys Gln Leu Leu Asp Phe Gly Ser Glu Asn Ala  
 35 40 45  
 Cys Glu Arg Thr Ser Phe Ala Phe Leu Arg Gln Glu Leu Pro Val Arg  
 50 55 60  
 Leu Ala Asn Ile Leu Lys Glu Ile Asp Ile Leu Pro Thr Gln Leu Val  
 65 70 75 80  
 Asn Thr Ser Ser Val Gln Leu Val Lys Ser Trp Tyr Ile Gln Ser Leu  
 85 90 95  
 Met Asp Leu Val Glu Phe His Glu Lys Ser Pro Asp Asp Gln Lys Ala  
 100 105 110  
 Leu Ser Asp Phe Val Asp Thr Leu Ile Lys Val Arg Asn Arg His His  
 115 120 125  
 Asn Val Val Pro Thr Met Ala Gln Gly Ile Ile Glu Tyr Lys Asp Ala  
 130 135 140  
 Cys Thr Val Asp Pro Val Thr Asn Gln Asn Leu Gln Tyr Phe Leu Asp  
 145 150 155 160  
 Arg Phe Tyr Met Asn Arg Ile Ser Thr Arg Met Leu Met Asn Gln His  
 165 170 175  
 Ile Leu Ile Phe Ser Asp Ser Gln Thr Gly Asn Pro Ser His Ile Gly  
 180 185 190  
 Ser Ile Asp Pro Asn Cys Asp Val Val Ala Val Val Gln Asp Ala Phe  
 195 200 205  
 Glu Cys Ser Arg Met Leu Cys Asp Gln Tyr Tyr Leu Ser Ser Pro Glu  
 210 215 220  
 Leu Lys Leu Thr Gln Val Asn Gly Lys Phe Pro Asp Gln Pro Ile His  
 225 230 235 240  
 Ile Val Tyr Val Pro Ser His Leu His His Met Leu Phe Glu Leu Phe  
 245 250 255  
 Lys Asn Ala Met Arg Ala Thr Val Glu His Gln Glu Asn Gln Pro Ser  
 260 265 270

Leu Thr Pro Ile Glu Val Ile Val Val Leu Gly Lys Glu Asp Leu Thr  
275 280 285

Ile Lys Ile Ser Asp Arg Gly Gly Gly Val Pro Leu Arg Ile Ile Asp  
290 295 300

Arg Leu Phe Ser Tyr Thr Tyr Ser Thr Ala Pro Thr Pro Val Met Asp  
305 310 315 320

Asn Ser Arg Asn Ala Pro Leu Ala Gly Phe Gly Tyr Gly Leu Pro Ile  
325 330 335

Ser Arg Leu Tyr Ala Lys Tyr Phe Gln Gly Asp Leu Asn Leu Tyr Ser  
340 345 350

Leu Ser Gly Tyr Gly Thr Asp Ala Ile Ile Tyr Leu Lys Ala Leu Ser  
355 360 365

Ser Glu Ser Ile Glu Lys Leu Pro Val Phe Asn Lys Ser Ala Phe Lys  
370 375 380

His Tyr Gln Met Ser Ser Glu Ala Asp Asp Trp Cys Ile Pro Ser Arg  
385 390 395 400

Glu Pro Lys Asn Leu Ala Lys Glu Val Ala Met  
405 410

<210> 96  
<211> 296  
<212> PRT  
<213> Homo sapiens

<400> 96

Met Ala Ser Pro Gln Leu Cys Arg Ala Leu Val Ser Ala Gln Trp Val  
1 5 10 15

Ala Glu Ala Leu Arg Ala Pro Arg Ala Gly Gln Pro Leu Gln Leu Leu  
20 25 30

Asp Ala Ser Trp Tyr Leu Pro Lys Leu Gly Arg Asp Ala Thr Gln Phe  
35 40 45

Glu Glu Arg His Ile Pro Gly Ala Ala Phe Phe Asp Ile Asp Gln Cys  
50 55 60

Ser Asp Arg Thr Ser Pro Tyr Asp His Met Leu Pro Gly Ala Glu His  
65 70 75 80

Phe Ala Glu Tyr Ala Gly Arg Leu Gly Val Gly Ala Ala Thr His Val  
85 90 95

Val Ile Tyr Asp Ala Ser Asp Gln Gly Leu Tyr Ser Ala Pro Arg Val  
100 105 110

Trp Trp Met Phe Arg Ala Phe Gly His His Ala Val Ser Leu Leu Asp  
115 120 125

Gly Gly Leu Arg His Trp Leu Arg Gln Asn Leu Pro Leu Ser Ser Gly  
130 135 140

Lys Ser Gln Pro Ala Pro Ala Glu Phe Arg Ala Gln Leu Asp Pro Ala  
145 150 155 160

Phe Ile Lys Thr Tyr Glu Asp Ile Lys Glu Asn Leu Glu Ser Arg Arg  
165 170 175

Phe Gln Val Val Asp Ser Arg Ala Thr Gly Arg Phe Arg Gly Thr Glu  
180 185 190

Pro Glu Pro Arg Asp Gly Ile Glu Pro Gly His Ile Pro Gly Thr Val  
195 200 205

Asn Ile Pro Phe Thr Asp Phe Leu Ser Gln Glu Gly Leu Glu Lys Ser  
210 215 220

Pro Glu Glu Ile Arg His Leu Phe Gln Glu Lys Lys Val Asp Leu Ser  
225 230 235 240

Lys Pro Leu Val Ala Thr Cys Gly Ser Gly Val Thr Ala Cys His Val  
245 250 255

Ala Leu Gly Ala Tyr Leu Cys Gly Lys Pro Asp Val Pro Ile Tyr Asp  
260 265 270

Gly Ser Trp Val Glu Trp Tyr Met Arg Ala Arg Pro Glu Asp Val Ile  
275 280 285

Ser Glu Gly Arg Gly Lys Thr His  
290 295

<210> 97  
<211> 430  
<212> PRT  
<213> Mus musculus

<400> 97

Met Ala Leu Leu His Ser Ser Arg Ile Leu Ser Gly Met Ala Ala Ala  
Page 179

1	5	10	15
Phe His Pro Gly 20	Leu Ala Ala Ala 25	Ala Ser Ala Arg Ala 30	Ser Ser Trp
Trp Thr His 35	Val Glu Met Gly 40	Pro Pro Asp Pro Ile 45	Leu Gly Val Thr
Glu Ala Phe Lys Arg Asp Thr 50	Asn Ser Lys Lys Met 55	Asn Leu Gly Val	
Gly Ala Tyr Arg Asp 65	Asp Asn Gly Lys Pro 70	Tyr Val Leu Pro Ser 75	Val 80
Arg Lys Ala Glu 85	Ala Gln Ile Ala Ala 90	Lys Asn Leu Asp Lys 95	Glu Tyr
Leu Pro Ile Gly 100	Gly Leu Ala Glu Phe 105	Cys Lys Ala Ser Ala 110	Glu Leu
Ala Leu Gly 115	Glu Asn Asn Glu Val 120	Leu Lys Ser Gly Arg 125	Phe Val Thr
Val Gln Thr Ile Ser Gly 130	Thr Gly Ala Leu Arg 135	Val Gly Ala Ser Phe 140	
Leu Gln Arg Phe Phe 145	Lys Phe Ser Arg Asp 150	Val Phe Leu Pro Lys 155	Pro 160
Ser Trp Gly Asn His 165	Thr Pro Ile Phe Arg 170	Asp Ala Gly Met Gln 175	Leu
Gln Gly Tyr Arg Tyr Tyr Asp 180	Pro Lys Thr Cys Gly Phe 185	Asp Phe Ser	
Gly Ala Leu 195	Glu Asp Ile Ser Lys 200	Ile Pro Glu Gln Ser 205	Val Leu Leu
Leu His Ala Cys Ala His 210	Asn Pro Thr Gly Val 215	Asp Pro Arg Pro Glu 220	
Gln Trp Lys Glu Ile Ala 225	Ser Val Val Lys Lys 230	Lys Asn Leu Phe Ala 235	240
Phe Phe Asp Met Ala 245	Tyr Gln Gly Phe Ala 250	Ser Gly Asp Gly Asp 255	Lys
Asp Ala Trp Ala Val Arg His Phe Ile Glu Gln Gly Ile Asn Val Cys			



260

265

270

Leu Cys Gln Ser Tyr Ala Lys Asn Met Gly Leu Tyr Gly Glu Arg Val  
 275 280 285

Gly Ala Phe Thr Val Val Cys Lys Asp Ala Glu Glu Ala Lys Arg Val  
 290 295 300

Glu Ser Gln Leu Lys Ile Leu Ile Arg Pro Leu Tyr Ser Asn Pro Pro  
 305 310 315 320

Leu Asn Gly Ala Arg Ile Ala Ala Thr Ile Leu Thr Ser Pro Asp Leu  
 325 330 335

Arg Lys Gln Trp Leu Gln Glu Val Lys Gly Met Ala Asp Arg Ile Ile  
 340 345 350

Ser Met Arg Thr Gln Leu Val Ser Asn Leu Lys Lys Glu Gly Ser Ser  
 355 360 365

His Asn Trp Gln His Ile Thr Asp Gln Ile Gly Met Phe Cys Phe Thr  
 370 375 380

Gly Leu Lys Pro Glu Gln Val Glu Arg Leu Thr Lys Glu Phe Ser Val  
 385 390 395 400

Tyr Met Thr Lys Asp Gly Arg Ile Ser Val Ala Gly Val Thr Ser Gly  
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Asn Val Gly Tyr Leu Ala His Ala Ile His Gln Val Thr Lys  
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<210> 98

<211> 748

<212> PRT

<213> Mus musculus

<400> 98

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Lys Gln Leu Asn Ile Pro Ser Ala Ser Arg Trp Lys Arg Leu Leu His  
 20 25 30

Gln Gln Gln Pro Leu His Pro Glu Trp Ala Val Leu Ala Lys Lys Gln  
 35 40 45

Leu Lys Gly Lys Asn Pro Glu Asp Leu Ile Trp His Thr Pro Glu Gly  
 50 55 60

Ile Ser Ile Lys Pro Leu Tyr Ser Arg Ala Asp Thr Leu Asp Leu Pro  
 65 70 75 80  
 Glu Glu Leu Pro Gly Val Lys Pro Phe Thr Arg Gly Pro Tyr Pro Thr  
 85 90 95  
 Met Tyr Thr Tyr Arg Pro Trp Thr Ile Arg Gln Tyr Ala Gly Phe Ser  
 100 105 110  
 Thr Val Glu Glu Ser Asn Lys Phe Tyr Lys Asp Asn Ile Lys Ala Gly  
 115 120 125  
 Gln Gln Gly Leu Ser Val Ala Phe Asp Leu Ala Thr His Arg Gly Tyr  
 130 135 140  
 Asp Ser Asp Asn Pro Arg Val Arg Gly Asp Val Gly Met Ala Gly Val  
 145 150 155 160  
 Ala Ile Asp Thr Val Glu Asp Thr Lys Ile Leu Phe Asp Gly Ile Pro  
 165 170 175  
 Leu Glu Lys Met Ser Val Ser Met Thr Met Asn Gly Ala Val Ile Pro  
 180 185 190  
 Val Leu Ala Thr Phe Ile Val Thr Gly Glu Glu Gln Gly Val Pro Lys  
 195 200 205  
 Glu Lys Leu Thr Gly Thr Ile Gln Asn Asp Ile Leu Lys Glu Phe Met  
 210 215 220  
 Val Arg Asn Thr Tyr Ile Phe Pro Pro Glu Pro Ser Met Lys Ile Ile  
 225 230 235 240  
 Ala Asp Ile Phe Gln Tyr Thr Ala Gln His Met Pro Lys Phe Asn Pro  
 245 250 255  
 Ile Ser Ile Ser Gly Tyr His Met Gln Glu Ala Gly Thr Asp Ala Ile  
 260 265 270  
 Leu Glu Leu Ala Tyr Thr Ile Ala Asp Gly Leu Glu Tyr Cys Arg Thr  
 275 280 285  
 Gly Leu Gln Ala Gly Leu Thr Ile Asp Glu Phe Ala Pro Arg Leu Ser  
 290 295 300  
 Phe Phe Trp Gly Ile Gly Met Asn Phe Tyr Met Glu Ile Ala Lys Met  
 305 310 315 320

Arg Ala Gly Arg Arg Leu Trp Ala His Leu Ile Glu Lys Met Phe Gln  
325 330 335

Pro Lys Asn Ser Lys Ser Leu Leu Leu Arg Ala His Cys Gln Thr Ser  
340 345 350

Gly Trp Ser Leu Thr Glu Gln Asp Pro Tyr Asn Asn Ile Val Arg Thr  
355 360 365

Ala Ile Glu Ala Met Ala Ala Val Phe Gly Gly Thr Gln Ser Leu His  
370 375 380

Ser Asn Ser Phe Asp Glu Ala Leu Gly Leu Pro Thr Val Lys Ser Ala  
385 390 395 400

Arg Ile Ala Arg Asn Thr Arg Ile Ile Ile Gln Glu Glu Ser Gly Ile  
405 410 415

Pro Lys Val Ala Asp Pro Trp Gly Gly Ser Tyr Met Met Glu Ser Leu  
420 425 430

Thr Asn Asp Val Tyr Glu Ala Ala Leu Lys Leu Ile Tyr Glu Val Glu  
435 440 445

Glu Met Gly Gly Met Ala Lys Ala Val Ala Glu Gly Ile Pro Lys Leu  
450 455 460

Arg Ile Glu Glu Cys Ala Ala Arg Arg Gln Ala Arg Ile Asp Ser Gly  
465 470 475 480

Ser Glu Val Ile Val Gly Val Asn Lys Tyr His Leu Glu Lys Glu Asp  
485 490 495

Ser Val His Leu Leu Ala Ile Asp Ile Ile Ser Leu Arg Lys Lys Gln  
500 505 510

Ile Glu Lys Leu Lys Lys Ile Lys Ser Ser Arg Asp Gln Ala Leu Ala  
515 520 525

Glu Gln Cys Leu Ser Ala Leu Thr Gln Cys Ala Ala Ser Gly Asp Gly  
530 535 540

Asn Ile Leu Ala Leu Ala Val Asp Ala Ala Arg Ala Arg Cys Thr Val  
545 550 555 560

Pro Glu Ile Thr Asp Ala Phe Lys Lys Val Phe Gly Glu His Lys Ala  
565 570 575

Asn Asp Arg Met Val Ser Gly Ala Tyr Arg Gln Glu Phe Gly Glu Ser  
580 585 590

Lys Glu Ile Thr Ser Ala Ile Lys Arg Val Asn Lys Phe Met Glu Arg  
595 600 605

Glu Gly Arg Arg Leu Gly Leu Leu Val Ala Lys Met Gly Lys Asp Gly  
610 615 620

His Asp Arg Gly Ala Lys Val Ile Ala Thr Gly Phe Ala Asp Leu Gly  
625 630 635 640

Phe Asp Val Asp Ile Gly Pro Leu Phe Gln Thr Pro Arg Glu Val Ala  
645 650 655

His Asp Ala Val Asp Ala Asp Val His Ala Val Gly Val Ser Thr His  
660 665 670

Ala Ala Gly His Lys Thr Leu Val Pro Glu Leu Ile Lys Glu Leu Thr  
675 680 685

Ala Leu Gly Arg Pro Asp Ile Leu Val Met Cys Gly Gly Val Ile Pro  
690 695 700

Pro Gln Asp Tyr Glu Phe Leu Tyr Glu Val Gly Val Ser Asn Val Phe  
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Gly Pro Gly Thr Arg Ile Pro Arg Ala Ala Val Gln Val Leu Asp Asp  
725 730 735

Ile Glu Lys Cys Leu Ala Glu Lys Gln Gln Ser Val  
740 745

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<211> 375  
<212> PRT  
<213> Neurospora crassa

<400> 99

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Thr Arg Thr Gly Lys Pro Ile Ile Arg Asn Gln Gly Gly Arg Ser Ser  
35 40 45

Leu Gly Gly His Thr Ala Thr Val Phe Gly Ala Thr Gly Gln Leu Gly  
 50 55 60  
 Arg Tyr Ile Val Asn Arg Leu Ala Arg Gln Gly Cys Thr Val Val Ile  
 65 70 75 80  
 Pro Phe Arg Asp Glu Tyr Asn Lys Arg His Leu Lys Val Thr Gly Asp  
 85 90 95  
 Leu Gly Lys Val Val Met Ile Glu Phe Asp Leu Arg Asn Thr Gln Ser  
 100 105 110  
 Ile Glu Glu Ser Val Arg His Ser Asp Val Val Tyr Asn Leu Ile Gly  
 115 120 125  
 Arg Asp Tyr Pro Thr Lys Asn Phe Ser Phe Glu Asp Val His Ile Glu  
 130 135 140  
 Gly Ala Glu Arg Ile Ala Glu Ala Val Ala Lys Tyr Asp Val Asp Arg  
 145 150 155 160  
 Phe Ile His Val Ser Ser Tyr Asn Ala Asp Pro Asn Ser Glu Cys Glu  
 165 170 175  
 Phe Phe Ala Thr Lys Ala Arg Gly Glu Gln Val Val Arg Ser Ile Phe  
 180 185 190  
 Pro Glu Thr Thr Ile Val Arg Pro Ala Pro Met Phe Gly Phe Glu Asp  
 195 200 205  
 Arg Leu Leu His Lys Leu Ala Ser Val Lys Asn Ile Leu Thr Ser Asn  
 210 215 220  
 Gly Met Gln Glu Lys Tyr Asn Pro Val His Val Ile Asp Val Gly Gln  
 225 230 235 240  
 Ala Leu Glu Gln Met Leu Trp Asp Asp Asn Thr Ala Ser Glu Thr Phe  
 245 250 255  
 Glu Leu Tyr Gly Pro Lys Thr Tyr Thr Thr Ala Glu Ile Ser Glu Met  
 260 265 270  
 Val Asp Arg Glu Ile Tyr Lys Arg Arg Arg His Val Asn Val Pro Lys  
 275 280 285  
 Lys Ile Leu Lys Pro Ile Ala Gly Val Leu Asn Lys Ala Leu Trp Trp  
 290 295 300

Pro Ile Met Ser Ala Asp Glu Ile Glu Arg Glu Phe His Asp Gln Val  
305 310 315 320

Ile Asp Pro Glu Ala Lys Thr Phe Lys Asp Leu Gly Ile Glu Pro Ala  
325 330 335

Asp Ile Ala Asn Phe Thr Tyr His Tyr Leu Gln Ser Tyr Arg Ser Asn  
340 345 350

Ala Tyr Tyr Asp Leu Pro Pro Ala Thr Glu Lys Glu Arg Arg Glu Asp  
355 360 365

Arg Glu Tyr Ile His Met Leu  
370 375

<210> 100  
<211> 110  
<212> PRT  
<213> Caenorhabditis elegans

<400> 100

Ser Asp Ile Pro Ala Gly Asp Tyr Glu Lys Gly Lys Lys Val Tyr Lys  
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Gln Arg Cys Leu Gln Cys His Val Val Asp Ser Thr Ala Thr Lys Thr  
20 25 30

Gly Pro Thr Leu His Gly Val Ile Gly Arg Thr Ser Gly Thr Val Ser  
35 40 45

Gly Phe Asp Tyr Ser Ala Ala Asn Lys Asn Lys Gly Val Val Trp Thr  
50 55 60

Lys Glu Thr Leu Phe Glu Tyr Leu Leu Asn Pro Lys Lys Tyr Ile Pro  
65 70 75 80

Gly Thr Lys Met Val Phe Ala Gly Leu Lys Lys Ala Asp Glu Arg Ala  
85 90 95

Asp Leu Ile Lys Tyr Ile Glu Val Glu Ser Ala Lys Ser Leu  
100 105 110

<210> 101  
<211> 558  
<212> PRT  
<213> Mus musculus

<400> 101

Met Tyr Arg Arg Leu Gly Glu Ala Leu Leu Leu Ser Arg Ala Gly Pro  
Page 186

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Ala Ala Leu Gly Ser Ala Ala Ala Asp Ser Ala Ala Leu Leu Gly Trp	20	25	30
Ala Arg Gly Gln Pro Ser Ala Ala Pro Gln Pro Gly Leu Thr Pro Val	35	40	45
Ala Arg Arg His Tyr Ser Glu Ala Ala Ala Asp Arg Glu Asp Asp Pro	50	55	60
Asn Phe Phe Lys Met Val Glu Gly Phe Phe Asp Arg Gly Ala Ser Ile	65	70	75
Val Glu Asp Lys Leu Val Glu Asp Leu Lys Thr Arg Glu Ser Glu Glu	85	90	95
Gln Lys Arg Asn Arg Val Arg Gly Ile Leu Arg Ile Ile Lys Pro Cys	100	105	110
Asn His Val Leu Ser Leu Ser Phe Pro Ile Arg Arg Asp Asp Gly Ser	115	120	125
Trp Glu Val Ile Glu Gly Tyr Arg Ala Gln His Ser Gln His Arg Thr	130	135	140
Pro Cys Lys Gly Gly Ile Arg Tyr Ser Thr Asp Val Ser Val Asp Glu	145	150	155
Val Lys Ala Leu Ala Ser Leu Met Thr Tyr Lys Cys Ala Val Val Asp	165	170	175
Val Pro Phe Gly Gly Ala Lys Ala Gly Val Lys Ile Asn Pro Lys Asn	180	185	190
Tyr Thr Asp Asn Glu Leu Glu Lys Ile Thr Arg Arg Phe Thr Met Glu	195	200	205
Leu Ala Lys Lys Gly Phe Ile Gly Pro Gly Ile Asp Val Pro Ala Pro	210	215	220
Asp Met Ser Thr Gly Glu Arg Glu Met Ser Trp Ile Ala Asp Thr Tyr	225	230	235
Ala Ser Thr Ile Gly His Tyr Asp Ile Asn Ala His Ala Cys Val Thr	245	250	255
Gly Lys Pro Ile Ser Gln Gly Gly Ile His Gly Arg Ile Ser Ala Thr			

260							265							270						
Gly	Arg	Gly 275	Val	Phe	His	Gly	Ile 280	Glu	Asn	Phe	Ile	Asn 285	Glu	Ala	Ser					
Tyr	Met 290	Ser	Ile	Leu	Gly	Met 295	Thr	Pro	Gly	Phe	Gly 300	Asp	Lys	Thr	Phe					
Val 305	Val	Gln	Gly	Phe	Gly 310	Asn	Val	Gly	Leu	His 315	Ser	Met	Arg	Tyr	Leu 320					
His	Arg	Phe	Gly	Ala 325	Lys	Cys	Val	Gly	Val 330	Gly	Glu	Ser	Asp	Gly 335	Ser					
Ile	Trp	Asn	Pro 340	Asp	Gly	Ile	Asp	Pro 345	Lys	Glu	Leu	Glu	Asp 350	Phe	Lys					
Leu	Gln	His 355	Gly	Ser	Ile	Leu	Gly 360	Phe	Pro	Lys	Ala	Lys 365	Val	Tyr	Glu					
Gly	Ser 370	Ile	Leu	Glu	Ala	Asp 375	Cys	Asp	Ile	Leu	Ile 380	Pro	Ala	Ala	Ser					
Glu 385	Lys	Gln	Leu	Thr	Lys 390	Ser	Asn	Ala	Pro	Arg 395	Val	Lys	Ala	Lys	Ile 400					
Ile	Ala	Glu	Gly	Ala 405	Asn	Gly	Pro	Thr	Thr 410	Pro	Glu	Ala	Asp	Lys 415	Ile					
Phe	Leu	Glu	Arg 420	Asn	Ile	Met	Val	Ile 425	Pro	Asp	Leu	Tyr	Leu 430	Asn	Ala					
Gly	Gly	Val 435	Thr	Val	Ser	Tyr	Phe 440	Glu	Trp	Leu	Lys	Asn 445	Leu	Asn	His					
Val	Ser 450	Tyr	Gly	Arg	Leu	Thr 455	Phe	Lys	Tyr	Glu	Arg 460	Asp	Ser	Asn	Tyr					
His 465	Leu	Leu	Met	Ser	Val 470	Gln	Glu	Ser	Leu	Glu 475	Arg	Lys	Phe	Gly	Lys 480					
His	Gly	Gly	Thr	Ile 485	Pro	Val	Val	Pro	Thr 490	Ala	Glu	Phe	Gln	Asp 495	Arg					
Ile	Ser	Gly	Ala 500	Ser	Glu	Lys	Asp	Ile 505	Val	His	Ser	Gly	Leu 510	Ala	Tyr					
Thr	Met	Glu	Arg	Ser	Ala	Arg	Gln	Ile	Met	Arg	Thr	Ala	Met	Lys	Tyr					



515

520

525

Asn Leu Gly Leu Asp Leu Arg Thr Ala Ala Tyr Val Asn Ala Ile Glu  
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Lys Val Phe Lys Val Tyr Asn Glu Ala Gly Val Thr Phe Thr  
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<210> 102  
 <211> 390  
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<400> 102

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Gln Lys Pro Ala Ser Arg Val Leu Val Ala Ser Arg Asn Phe Ala Asn  
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Gly Pro Pro Val Thr Thr Val Leu Thr Arg Glu Asp Gly Leu Lys Tyr  
 50 55 60

Tyr Arg Met Met Gln Thr Val Arg Arg Met Glu Leu Lys Ala Asp Gln  
 65 70 75 80

Leu Tyr Lys Gln Lys Ile Ile Arg Gly Phe Cys His Leu Cys Asp Gly  
 85 90 95

Gln Glu Ala Cys Cys Val Gly Leu Glu Ala Gly Ile Asn Pro Thr Asp  
 100 105 110

His Leu Ile Thr Ala Tyr Arg Ala His Gly Phe Thr Phe Thr Arg Gly  
 115 120 125

Leu Pro Val Arg Ala Ile Leu Ala Glu Leu Thr Gly Arg Arg Gly Gly  
 130 135 140

Cys Ala Lys Gly Lys Gly Gly Ser Met His Met Tyr Ala Lys Asn Phe  
 145 150 155 160

Tyr Gly Gly Asn Gly Ile Val Gly Ala Gln Val Pro Leu Gly Ala Gly  
 165 170 175

Ile Ala Leu Ala Cys Lys Tyr Asn Gly Lys Asp Glu Val Cys Leu Thr  
 180 185 190

Leu Tyr Gly Asp Gly Ala Ala Asn Gln Gly Gln Ile Phe Glu Ala Tyr  
195 200 205

Asn Met Ala Ala Leu Trp Lys Leu Pro Cys Ile Phe Ile Cys Glu Asn  
210 215 220

Asn Arg Tyr Gly Met Gly Thr Ser Val Glu Arg Ala Ala Ala Ser Thr  
225 230 235 240

Asp Tyr Tyr Lys Arg Gly Asp Phe Ile Pro Gly Leu Arg Val Asp Gly  
245 250 255

Met Asp Ile Leu Cys Val Arg Glu Ala Thr Lys Phe Ala Ala Ala Tyr  
260 265 270

Cys Arg Ser Gly Lys Gly Pro Ile Leu Met Glu Leu Gln Thr Tyr Arg  
275 280 285

Tyr His Gly His Ser Met Ser Asp Pro Gly Val Ser Tyr Arg Thr Arg  
290 295 300

Glu Glu Ile Gln Glu Val Arg Ser Lys Ser Asp Pro Ile Met Leu Leu  
305 310 315 320

Lys Asp Arg Met Val Asn Ser Asn Leu Ala Ser Val Glu Glu Leu Lys  
325 330 335

Glu Ile Asp Val Glu Val Arg Lys Glu Ile Glu Asp Ala Ala Gln Phe  
340 345 350

Ala Thr Ala Asp Pro Glu Pro Pro Leu Glu Glu Leu Gly Tyr His Ile  
355 360 365

Tyr Ser Ser Asp Pro Pro Phe Glu Val Arg Gly Ala Asn Gln Trp Ile  
370 375 380

Lys Phe Lys Ser Val Ser  
385 390

<210> 103  
<211> 220  
<212> PRT  
<213> Homo sapiens

<400> 103

Pro Pro Thr Pro Ser Ala Pro Cys Pro Ala Thr Pro Ala Gly Pro Lys  
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Gly Arg Val Phe Val Ser Pro Leu Ala Lys Lys Leu Ala Val Glu Lys  
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Gly Ile Asp Leu Thr Gln Val Lys Gly Thr Gly Pro Asp Gly Arg Ile  
35 40 45

Thr Lys Lys Asp Ile Asp Ser Phe Val Pro Ser Lys Val Ala Pro Ala  
50 55 60

Pro Ala Ala Val Val Pro Pro Thr Gly Pro Gly Met Ala Pro Val Pro  
65 70 75 80

Thr Gly Val Phe Thr Asp Ile Pro Ile Ser Asn Ile Arg Arg Val Ile  
85 90 95

Ala Gln Arg Leu Met Gln Ser Lys Gln Thr Ile Pro His Tyr Tyr Leu  
100 105 110

Ser Ile Asp Val Asn Met Gly Glu Val Leu Leu Val Arg Lys Glu Leu  
115 120 125

Asn Lys Ile Leu Glu Gly Arg Ser Lys Ile Ser Val Asn Asp Phe Ile  
130 135 140

Ile Lys Ala Ser Ala Leu Ala Cys Leu Lys Val Pro Glu Ala Asn Ser  
145 150 155 160

Ser Trp Met Asp Thr Val Ile Arg Gln Asn His Val Val Asp Val Ser  
165 170 175

Val Ala Val Ser Thr Pro Ala Gly Leu Ile Thr Pro Ile Val Phe Asn  
180 185 190

Ala His Ile Lys Gly Val Glu Thr Ile Ala Asn Asp Val Val Ser Leu  
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<210> 104  
<211> 896  
<212> PRT  
<213> Neurospora crassa

<400> 104

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 Lys Asp Val Lys Tyr Ile Thr Lys Asn Phe Leu Leu Glu Asn Ser Asn  
 35 40 45  
 Gly Phe Asn Leu Ile Lys Asn Ile Ile Asn Ser Asp Glu Thr Ser Glu  
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 Val Lys Gln Asn Lys Ile Glu Val Glu Leu Asn Asn Ile Trp His Thr  
 65 70 75 80  
 Glu Ile Thr Asp Ile Leu Gln Lys Lys Arg Ser Leu Gly Leu Asp Ala  
 85 90 95  
 Ile Gly Ser Ser Ile Leu Ala Lys Asp Phe His Asn Leu Ile Gly Asp  
 100 105 110  
 Ile Glu Asn Phe Ile Asn Lys Gly Arg Thr Asn Lys Leu Pro Gly Val  
 115 120 125  
 Glu Tyr Leu Lys Pro Ser Leu Ile Ile Ser Ile Val Leu Gly Lys Val  
 130 135 140  
 Ile Pro Phe Ser Leu Arg His Ser Asp Ile Phe Asn Gln Pro Thr His  
 145 150 155 160  
 Ser Leu Phe Ala Glu Ile Gly Lys Ile Leu Lys Tyr Gln Ser Ile Phe  
 165 170 175  
 Glu Leu His His Arg Ile Gly Leu Ile Gln Asn Arg Val Glu Glu Ile  
 180 185 190  
 Lys Asn Tyr Thr Glu Lys Lys Leu Val Ser Glu Phe Asn Lys Leu Thr  
 195 200 205  
 Lys Val Leu Asp Glu Tyr Lys Asn Thr Leu Lys Asn Leu Glu Glu Leu  
 210 215 220  
 Ser Gly Glu Ser Ile Ile Lys Val Gly Leu Gly Phe Thr Ala Leu Leu  
 225 230 235 240  
 Ser Glu Thr Ser Glu Phe Tyr Ser Leu Glu Glu Gln Ile Ile Ala Lys  
 245 250 255  
 Asn Lys Ser Ile Arg Tyr Ile Ile Pro Lys Asn Lys Leu Lys Thr Leu  
 260 265 270

Ile Asn Asn Ile Thr Leu Met Asp Thr Ile Glu Leu Pro Met Ile Ile  
 275 280 285  
 Pro Pro Leu Glu Trp Lys Ile Asp Asp Asn Glu Lys Ile Ile Glu Tyr  
 290 295 300  
 Gly Gly Thr Ile Leu Asn Asn Lys His Arg Ile Arg Pro Leu Arg Thr  
 305 310 315 320  
 Lys Ser Val Glu Asn Ser Asp Ala Asn Asp Met Thr Tyr Asn Lys Glu  
 325 330 335  
 Leu Val Asp Ala Val Asn Phe Lys Ser Lys Ile Pro Tyr Thr Ile Asn  
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 Leu Lys Ile Leu Asp Phe Ile Thr Arg Asp Glu Phe Ile Asn Arg Asp  
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 Lys Lys Asp Asn Val Ile Ile Tyr Lys His Ile His Pro Asp Ser Ala  
 370 375 380  
 Leu Leu Gly Glu Tyr Met Lys Asp Arg Lys Asn Pro Lys Ile Ser Glu  
 385 390 395 400  
 Ile Thr Thr His Asn Ser Lys Phe Leu Tyr His Ser Ser Ile Ile Ser  
 405 410 415  
 Ile Ala Lys Leu Met Lys Asp Val Lys Glu Phe Tyr Met Thr Val Phe  
 420 425 430  
 Ile Asp Trp Arg Gly Arg Phe Tyr Thr Ser Ser Cys Ala Leu Asn Ile  
 435 440 445  
 Gln Gly Gly Glu Leu Ala Arg Ser Leu Leu Leu Phe Lys Glu Gly Gln  
 450 455 460  
 Lys Leu Asn Asp Ile Gly Leu Lys Ala Leu Lys Ile Tyr Thr Ala Asn  
 465 470 475 480  
 Ala Phe Gly Leu Asp Lys Arg Ser Lys Glu Glu Arg Leu Asp Trp Val  
 485 490 495  
 Glu Gln Asn Leu His Lys Ile Ile Asp Ile Asp Asn Tyr Glu Ile Trp  
 500 505 510  
 Arg Glu Ala Asp Glu Pro Leu Leu Phe Leu Ala Cys Ala Leu Glu Leu  
 515 520 525

Lys Gly Tyr Asn Glu Asp Pro Asn Phe Ile Ser His Leu Pro Ile Leu  
 530 535 540  
 Met Asp Ala Thr Cys Asn Gly Leu Gln His Leu Ser Ala Met Val Asn  
 545 550 555 560  
 Asp Phe Val Leu Ala Glu Lys Val Asn Leu Leu Lys Ser Thr Glu Asn  
 565 570 575  
 Asp Asn Pro Arg Asp Leu Tyr Ser Glu Val Ile Pro His Ile Lys Gln  
 580 585 590  
 Glu Ile Leu Glu Ala Ser Lys Ser Tyr Glu His Thr Asn Leu Glu Arg  
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 Tyr Gly Ala Thr Glu Arg Gly Ile Tyr Asp Gln Ile Val Ser Lys Phe  
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 Phe Gln Lys Asp Glu Trp Asn Lys Thr Val Gly Leu His Phe Val Cys  
 645 650 655  
 Ile Asp Ser Asp Ile Ala Pro Lys Asp Val Val Phe Thr Gln Lys Asn  
 660 665 670  
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 675 680 685  
 Pro Asn Leu Asn Thr Leu Met Val Tyr Phe Asn Ser Ile Val Lys Val  
 690 695 700  
 Leu Cys Glu Leu Asp Leu Pro Val Asn Trp Val Thr Pro Tyr Gly Leu  
 705 710 715 720  
 Val Ile Gln Gln Lys Tyr Asn Lys Phe Thr Lys Tyr Asn Glu Thr Thr  
 725 730 735  
 Tyr Val Ala Ser Lys Arg Tyr Lys Leu Val Leu Arg Lys Ala Asp Thr  
 740 745 750  
 Thr Ser Ile Ser Lys Gln Lys Gln Ile Gln Ala Phe Ile Pro Asn Phe  
 755 760 765  
 Val His Ser Met Asp Gly Ser Asn Ile Val Leu Leu Ile Asn Thr Ile  
 770 775 780

Arg Asp Glu Gly Arg Lys Ile Asn Phe Ala Ser Ile His Asp Cys Phe  
785 790 795 800

Ala Thr His Ala Asn Asp Thr Ala Trp Leu Ser Trp Tyr Val Lys Gln  
805 810 815

Ser Phe Ile Arg Ile Tyr Ser Asp Ser Ser Phe Leu Arg Arg Phe His  
820 825 830

Asn Tyr Ile Gln Leu Arg Ile Gln Ala Lys Tyr Gly Glu Asp Ala His  
835 840 845

Phe Asp Lys Asp Gly Val Leu Thr His Val Thr Ile Asp Asn Gly Thr  
850 855 860

Asp Ile Pro Asp Arg Ile Asp Ile Pro Lys Pro Leu Val Val Asn Lys  
865 870 875 880

Asp Asn Lys Ile Tyr Lys Glu Ile Leu His Ser Glu Tyr Phe Ile Asn  
885 890 895

<210> 105  
<211> 255  
<212> PRT  
<213> Homo sapiens  
<400> 105

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Ala Val Lys Ile Arg Val Lys Pro Asp Arg Thr Gly Val Val Thr Asp  
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Gly Val Lys His Ser Met Asn Pro Phe Cys Glu Ile Ala Val Glu Glu  
35 40 45

Ala Val Arg Leu Lys Glu Lys Lys Leu Val Lys Glu Val Ile Ala Val  
50 55 60

Ser Cys Gly Pro Ala Gln Cys Gln Glu Thr Ile Arg Thr Ala Leu Ala  
65 70 75 80

Met Gly Ala Asp Arg Gly Ile His Val Glu Val Pro Pro Ala Glu Ala  
85 90 95

Glu Arg Leu Gly Pro Leu Gln Val Ala Arg Val Leu Ala Lys Leu Ala  
100 105 110

Glu Lys Glu Lys Val Asp Leu Val Leu Leu Gly Lys Gln Ala Ile Asp  
Page 195

115

120

125

Asp Asp Cys Asn Gln Thr Gly Gln Met Thr Ala Gly Phe Leu Asp Trp  
 130 135 140

Pro Gln Gly Thr Phe Ala Ser Gln Val Thr Leu Glu Gly Asp Lys Leu  
 145 150 155 160

Lys Val Glu Arg Glu Ile Asp Gly Gly Leu Glu Thr Leu Arg Leu Lys  
 165 170 175

Leu Pro Ala Val Val Thr Ala Asp Leu Arg Leu Asn Glu Pro Arg Tyr  
 180 185 190

Ala Thr Leu Pro Asn Ile Met Lys Ala Lys Lys Lys Lys Ile Glu Val  
 195 200 205

Ile Lys Pro Gly Asp Leu Gly Val Asp Leu Thr Ser Lys Leu Ser Val  
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Ile Ser Val Glu Asp Pro Pro Gln Arg Thr Ala Gly Val Lys Val Glu  
 225 230 235 240

Thr Thr Glu Asp Leu Val Ala Lys Leu Lys Glu Ile Gly Arg Ile  
 245 250 255

<210> 106

<211> 289

<212> PRT

<213> Mus musculus

<400> 106

Met Ala Leu Ala Ala Ala Arg Arg Leu Leu Leu His Ala Gly Ser Arg  
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Arg Val Leu Val Glu Thr Glu Gly Pro Ala Gly Val Ala Val Met Lys  
 35 40 45

Leu Arg Asn Pro Pro Val Asn Ser Leu Ser Leu Glu Cys Leu Thr Glu  
 50 55 60

Phe Thr Ile Ser Leu Glu Lys Leu Glu Asn Asp Lys Ser Ile Arg Gly  
 65 70 75 80

Val Ile Leu Thr Ser Glu Cys Pro Gly Ile Phe Ser Ala Gly Leu Asp  
 85 90 95



Leu Leu Glu Met Tyr Gly Arg Asn Pro Ala His Tyr Ala Glu Tyr Trp  
100 105 110

Lys Asn Val Gln Glu Leu Trp Leu Arg Leu Tyr Thr Ser Asn Met Ile  
115 120 125

Leu Val Ser Ala Ile Asn Gly Ala Ser Pro Ala Gly Gly Cys Leu Leu  
130 135 140

Ala Leu Cys Cys Asp Tyr Arg Val Met Ala Asp Asn Pro Lys Tyr Thr  
145 150 155 160

Ile Gly Leu Asn Glu Ser Leu Leu Gly Ile Val Ala Pro Phe Trp Phe  
165 170 175

Lys Asp Met Tyr Val Asn Thr Ile Gly His Arg Glu Ala Asp Gly Ala  
180 185 190

Leu Gln Leu Gly Thr Leu Phe Ser Pro Ala Glu Ala Leu Lys Val Gly  
195 200 205

Val Val Asp Glu Val Val Pro Glu Asp Gln Val His Ser Lys Ala Arg  
210 215 220

Ser Val Met Thr Lys Trp Leu Ala Ile Pro Asp His Ser Arg Gln Leu  
225 230 235 240

Thr Lys Asn Met Met Arg Lys Ala Thr Ala Asp Asn Leu Ile Lys Gln  
245 250 255

Arg Glu Ala Asp Ile Gln Asn Phe Thr Ser Phe Ile Ser Lys Asp Ser  
260 265 270

Ile Gln Lys Ser Leu His Met Tyr Leu Glu Lys Leu Lys Gln Lys Lys  
275 280 285

Gly

<210> 107  
<211> 390  
<212> PRT  
<213> Mus musculus

<400> 107

Met Ala Ala Val Ala Ala Arg Ala Gly Gly Leu Leu Trp Leu Arg Ala  
1 5 10 15

Ala Gly Ala Glu Arg Arg Arg Cys Gly Leu Arg Cys Ala Ala Leu Val  
 20 25 30  
 Gln Gly Phe Leu Gln Pro Gly Gly Glu Asp Thr Ala Gln Lys Arg Arg  
 35 40 45  
 Val Ala His Phe Thr Phe His Pro Asp Pro Glu Ser Leu Gln Tyr Gly  
 50 55 60  
 Gln Thr Gln Lys Met Asn Leu Phe Gln Ser Ile Thr Ser Ala Leu Asp  
 65 70 75 80  
 Asn Ser Leu Ala Lys Asp Pro Thr Ala Val Ile Phe Gly Glu Asp Val  
 85 90 95  
 Ala Phe Gly Gly Val Phe Arg Cys Thr Val Gly Leu Arg Asp Lys Tyr  
 100 105 110  
 Gly Lys Asp Arg Val Phe Asn Thr Pro Leu Cys Glu Gln Gly Ile Val  
 115 120 125  
 Gly Phe Gly Ile Gly Ile Ala Val Thr Gly Ala Thr Ala Ile Ala Glu  
 130 135 140  
 Ile Gln Phe Ala Asp Tyr Ile Phe Pro Ala Phe Asp Gln Ile Val Asn  
 145 150 155 160  
 Glu Ala Ala Lys Tyr Arg Tyr Arg Ser Gly Asp Leu Phe Asn Cys Gly  
 165 170 175  
 Ser Leu Thr Ile Arg Ala Pro Trp Gly Cys Val Gly His Gly Ala Leu  
 180 185 190  
 Tyr His Ser Gln Ser Pro Glu Ala Phe Phe Ala His Cys Pro Gly Ile  
 195 200 205  
 Lys Val Val Ile Pro Arg Ser Pro Phe Gln Ala Lys Gly Leu Leu Leu  
 210 215 220  
 Ser Cys Ile Glu Asp Lys Asn Pro Cys Ile Phe Phe Glu Pro Lys Ile  
 225 230 235 240  
 Leu Tyr Arg Ala Ala Val Glu Gln Val Pro Val Glu Pro Tyr Lys Ile  
 245 250 255  
 Pro Leu Ser Gln Ala Glu Val Ile Gln Glu Gly Ser Asp Val Thr Leu  
 260 265 270

Val Ala Trp Gly Thr Gln Val His Val Ile Arg Glu Val Ala Ser Met  
275 280 285

Ala Gln Glu Lys Leu Gly Val Ser Cys Glu Val Ile Asp Leu Arg Thr  
290 295 300

Ile Val Pro Trp Asp Val Asp Thr Val Cys Lys Ser Val Ile Lys Thr  
305 310 315 320

Gly Arg Leu Leu Ile Ser His Glu Ala Pro Leu Thr Gly Gly Phe Ala  
325 330 335

Ser Glu Ile Ser Ser Thr Val Gln Glu Glu Cys Phe Leu Asn Leu Glu  
340 345 350

Ala Pro Ile Ser Arg Val Cys Gly Tyr Asp Thr Pro Phe Pro His Ile  
355 360 365

Phe Glu Pro Phe Tyr Ile Pro Asp Lys Trp Lys Cys Tyr Asp Ala Leu  
370 375 380

Arg Lys Met Ile Asn Tyr  
385 390

<210> 108  
<211> 742  
<212> PRT  
<213> Homo sapiens

<400> 108

Met Leu Arg Ala Lys Asn Gln Leu Phe Leu Leu Ser Pro His Tyr Leu  
1 5 10 15

Arg Gln Val Lys Glu Ser Ser Gly Ser Arg Leu Ile Gln Gln Arg Leu  
20 25 30

Leu His Gln Gln Gln Pro Leu His Pro Glu Trp Ala Ala Leu Ala Lys  
35 40 45

Lys Gln Leu Lys Gly Lys Asn Pro Glu Asp Leu Ile Trp His Thr Pro  
50 55 60

Glu Gly Ile Ser Ile Lys Pro Leu Tyr Ser Lys Arg Asp Thr Met Asp  
65 70 75 80

Leu Pro Glu Glu Leu Pro Gly Val Lys Pro Phe Thr Arg Gly Pro Tyr  
85 90 95

Pro Thr Met Tyr Thr Phe Arg Pro Trp Thr Ile Arg Gln Tyr Ala Gly  
 100 105 110  
 Phe Ser Thr Val Glu Glu Ser Asn Lys Phe Tyr Lys Asp Asn Ile Lys  
 115 120 125  
 Ala Gly Gln Gln Gly Leu Ser Val Ala Phe Asp Leu Ala Thr His Arg  
 130 135 140  
 Gly Tyr Asp Ser Asp Asn Pro Arg Val Arg Gly Asp Val Gly Met Ala  
 145 150 155 160  
 Gly Val Ala Ile Asp Thr Val Glu Asp Thr Lys Ile Leu Phe Asp Gly  
 165 170 175  
 Ile Pro Leu Glu Lys Met Ser Val Ser Met Thr Met Asn Gly Ala Val  
 180 185 190  
 Ile Pro Val Leu Ala Asn Phe Ile Val Thr Gly Glu Glu Gln Gly Val  
 195 200 205  
 Pro Lys Glu Lys Leu Thr Gly Thr Ile Gln Asn Asp Ile Leu Lys Glu  
 210 215 220  
 Phe Met Val Arg Asn Thr Tyr Ile Phe Pro Pro Asp Pro Ser Met Lys  
 225 230 235 240  
 Ile Ile Ala Asp Ile Phe Glu Tyr Thr Ala Lys His Met Pro Lys Phe  
 245 250 255  
 Asn Ser Ile Ser Ile Ser Gly Tyr His Met Gln Glu Ala Gly Ala Asp  
 260 265 270  
 Ala Ile Leu Glu Leu Ala Tyr Thr Leu Ala Asp Gly Leu Glu Tyr Ser  
 275 280 285  
 Arg Thr Gly Leu Gln Ala Gly Leu Thr Ile Asp Glu Phe Ala Pro Arg  
 290 295 300  
 Leu Ser Phe Phe Trp Gly Ile Gly Met Asn Phe His Met Glu Ile Ala  
 305 310 315 320  
 Lys Met Arg Ala Gly Arg Arg Leu Trp Ala His Leu Ile Glu Lys Met  
 325 330 335  
 Phe Gln Pro Lys Asn Ser Lys Ser Leu Leu Leu Arg Ala His Cys Gln  
 340 345 350

Thr Ser Gly Trp Ser Leu Thr Glu Gln Asp Pro Tyr Asn Asn Ile Val  
 355 360 365  
 Arg Thr Ala Ile Glu Ala Met Ala Ala Val Phe Gly Gly Thr Gln Ser  
 370 375 380  
 Leu His Thr Asn Ser Phe Asp Glu Ala Leu Gly Leu Pro Thr Val Lys  
 385 390 395 400  
 Ser Ala Arg Ile Ala Arg Asn Thr Gln Ile Ile Ile Gln Glu Glu Ser  
 405 410 415  
 Gly Ile Pro Lys Val Ala Asp Pro Trp Gly Gly Ser Tyr Met Met Glu  
 420 425 430  
 Cys Leu Thr Lys Leu Ile Asn Glu Ile Glu Glu Met Gly Gly Met Ala  
 435 440 445  
 Lys Ala Val Ala Glu Gly Ile Pro Lys Leu Arg Ile Glu Glu Cys Ala  
 450 455 460  
 Ala Arg Arg Gln Ala Arg Ile Asp Ser Gly Ser Glu Val Ile Val Gly  
 465 470 475 480  
 Val Asn Lys Tyr Gln Leu Glu Lys Glu Asp Ala Val Glu Val Leu Ala  
 485 490 495  
 Thr Asp Asn Thr Ser Val Arg Asn Arg Gln Ile Glu Gly Leu Lys Lys  
 500 505 510  
 Ile Lys Ser Ser Arg Asp Gln Ala Leu Ala Glu His Cys Leu Ala Ala  
 515 520 525  
 Leu Thr Glu Cys Ala Ala Ser Gly Asp Gly Asn Ile Leu Ala Leu Ala  
 530 535 540  
 Val Asp Ala Ser Arg Ala Arg Cys Thr Val Gly Glu Ile Thr Asp Ala  
 545 550 555 560  
 Leu Lys Lys Val Phe Gly Glu His Lys Ala Asn Asp Arg Met Val Ser  
 565 570 575  
 Gly Ala Tyr Arg Gln Glu Tyr Gly Glu Ser Lys Glu Ile Thr Ser Ala  
 580 585 590  
 Ile Lys Arg Val His Lys Phe Met Glu Arg Glu Gly Arg Arg Pro Arg  
 595 600 605

Leu Leu Val Ala Lys Met Gly Gln Asp Gly His Asp Arg Gly Ala Lys  
610 615 620

Val Ile Ala Thr Gly Phe Ala Asp Leu Gly Phe Asp Val Asp Ile Gly  
625 630 635 640

Pro Leu Phe Gln Thr Pro Arg Glu Val Ala Gln Gln Ala Val Asp Ala  
645 650 655

Asp Val His Ala Val Gly Val Ser Thr Leu Ala Ala Gly His Lys Thr  
660 665 670

Leu Val Pro Glu Leu Ile Lys Glu Leu Asn Ser Leu Gly Arg Pro Asp  
675 680 685

Ile Leu Val Met Cys Gly Gly Val Ile Pro Pro Gln Asp Tyr Glu Phe  
690 695 700

Leu Phe Glu Val Gly Val Ser Asn Val Phe Gly Pro Gly Thr Arg Ile  
705 710 715 720

Pro Lys Ala Ala Val Gln Val Leu Asp Asp Ile Glu Lys Cys Leu Glu  
725 730 735

Lys Lys Gln Gln Ser Val  
740

<210> 109  
<211> 288  
<212> PRT  
<213> Caenorhabditis elegans

<400> 109

Met Met Arg Phe Ser Ser Met Leu Val Arg Asn Ala Lys Leu Cys Ala  
1 5 10 15

Asn Val Asn Gln Met Gln Val Ala Ala Phe Ser Ser Lys Ala Pro Glu  
20 25 30

Met Ile Lys Ile Glu Lys Val Gly Glu Lys Gln Asn Val Ala Leu Ile  
35 40 45

Lys Leu Asn Arg Pro Lys Ala Leu Asn Ala Leu Cys Ala Gln Leu Met  
50 55 60

Thr Glu Leu Ala Asp Ala Leu Glu Val Leu Asp Thr Asp Lys Ser Val  
65 70 75 80

Gly Ala Ile Val Ile Thr Gly Ser Glu Arg Ala Phe Ala Ala Gly Ala  
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85

90

95

Asp Ile Lys Glu Met Thr Asn Asn Glu Phe Ala Thr Thr Phe Ser Gly  
100 105 110

Ser Phe Leu Ser Asn Trp Thr Ala Val Ser Asp Val Lys Lys Pro Val  
115 120 125

Ile Ala Ala Val Asn Gly Phe Ala Leu Gly Gly Gly Asn Glu Leu Ala  
130 135 140

Met Met Cys Asp Ile Ile Tyr Ala Gly Glu Lys Ala Arg Phe Gly Gln  
145 150 155 160

Pro Glu Ile Asn Ile Gly Thr Ile Pro Gly Ala Gly Gly Thr Gln Arg  
165 170 175

Trp Ala Arg Ala Ala Gly Lys Ser Phe Ala Met Glu Val Cys Leu Thr  
180 185 190

Gly Asn His Val Thr Ala Gln Glu Ala Lys Glu His Gly Ile Val Ser  
195 200 205

Lys Ile Phe Pro Ala Asp Gln Val Val Gly Glu Ala Val Lys Leu Gly  
210 215 220

Glu Lys Ile Ala Asp Gln Ser Pro Leu Ile Val Gln Met Ala Lys Glu  
225 230 235 240

Ala Val Asn Lys Ala Tyr Glu Leu Thr Leu Gln Glu Gly Leu His Phe  
245 250 255

Glu Arg Arg Leu Phe His Ala Thr Phe Ala Thr Lys Asp Arg Lys Glu  
260 265 270

Gly Met Thr Ala Phe Ala Glu Lys Arg Lys Pro Gln Trp Glu Ser Lys  
275 280 285

<210> 110

<211> 469

<212> PRT

<213> Neurospora crassa

<400> 110

Met Ala Pro Val Met Arg Leu Gly Ser Ala Ala Leu Arg Ser Ser Ile  
1 5 10 15

His Leu Thr Ser Arg Gln Thr Ala Phe Thr Ala Ala Arg Cys Tyr Ser  
20 25 30

Ser Lys Thr Gln Thr Leu Lys Glu Arg Phe Ala Glu Leu Leu Pro Glu  
 35 40 45  
 Asn Ile Glu Lys Ile Lys Ala Leu Arg Lys Glu His Gly Ser Lys Val  
 50 55 60  
 Val Asp Lys Val Thr Leu Asp Gln Val Tyr Gly Gly Ala Arg Gly Ile  
 65 70 75 80  
 Lys Cys Leu Val Trp Glu Gly Ser Val Leu Asp Ala Glu Glu Gly Ile  
 85 90 95  
 Arg Phe Arg Gly Lys Thr Ile Pro Glu Cys Gln Glu Leu Leu Pro Lys  
 100 105 110  
 Ala Pro Gly Gly Lys Glu Pro Leu Pro Glu Gly Leu Phe Trp Leu Leu  
 115 120 125  
 Leu Thr Gly Glu Val Pro Ser Glu Gln Gln Val Arg Asp Leu Ser Ala  
 130 135 140  
 Glu Trp Ala Ala Arg Ser Asp Val Pro Lys Phe Ile Glu Glu Leu Ile  
 145 150 155 160  
 Asp Arg Cys Pro Ser Asp Leu His Pro Met Ala Gln Leu Ser Leu Ala  
 165 170 175  
 Val Thr Ala Leu Glu His Thr Ser Ser Phe Ala Arg Ala Tyr Ala Lys  
 180 185 190  
 Gly Ile Asn Lys Lys Glu Tyr Trp Gly Tyr Thr Phe Glu Asp Ser Met  
 195 200 205  
 Asp Leu Ile Ala Lys Leu Pro Thr Ile Ala Ala Arg Ile Tyr Gln Asn  
 210 215 220  
 Val Phe Lys Gly Gly Lys Val Ala Ala Val Gln Lys Asp Lys Asp Tyr  
 225 230 235 240  
 Ser Phe Asn Phe Ala Asn Gln Leu Gly Phe Gly Asp Asn Lys Asp Phe  
 245 250 255  
 Val Glu Leu Leu Arg Leu Tyr Leu Thr Ile His Thr Asp His Glu Gly  
 260 265 270  
 Gly Asn Val Ser Ala His Thr Thr His Leu Val Gly Ser Ala Leu Ser  
 275 280 285



Ser Pro Phe Leu Ser Val Ala Ala Gly Leu Asn Gly Leu Ala Gly Pro  
290 295 300

Leu His Gly Leu Ala Asn Gln Glu Val Leu Asn Trp Leu Thr Glu Met  
305 310 315 320

Lys Lys Val Ile Gly Asp Asp Leu Ser Asp Glu Ala Ile Thr Lys Tyr  
325 330 335

Leu Trp Asp Thr Leu Asn Ala Gly Arg Val Val Pro Gly Tyr Ala His  
340 345 350

Ala Val Leu Arg Lys Thr Asp Pro Arg Tyr Ser Ala Gln Arg Lys Phe  
355 360 365

Ala Gln Glu His Leu Pro Glu Asp Pro Met Phe Gln Leu Val Ser Gln  
370 375 380

Val Tyr Lys Ile Ala Pro Lys Val Leu Thr Glu His Gly Lys Thr Lys  
385 390 395 400

Asn Pro Tyr Pro Asn Val Asp Ala His Ser Gly Val Leu Leu Gln His  
405 410 415

Tyr Gly Leu Thr Glu Ala Asn Tyr Tyr Thr Val Leu Phe Gly Val Ser  
420 425 430

Arg Ala Ile Gly Val Leu Pro Gln Leu Ile Ile Asp Arg Ala Val Gly  
435 440 445

Ala Pro Ile Glu Arg Pro Lys Ser Tyr Ser Thr Asp Lys Trp Ile Glu  
450 455 460

Ile Cys Lys Lys Leu  
465

<210> 111  
<211> 937  
<212> PRT  
<213> Homo sapiens

<400> 111

Met Leu Ala Ala Ala Gly Gly Arg Val Pro Thr Ala Ala Gly Ala Trp  
1 5 10 15

Leu Leu Arg Gly Gln Arg Thr Cys Asp Ala Ser Pro Pro Trp Ala Leu  
20 25 30

Trp Gly Arg Gly Pro Ala Ile Gly Gly Gln Trp Arg Gly Phe Trp Glu  
 35 40 45  
 Ala Ser Ser Arg Gly Gly Gly Ala Phe Ser Gly Gly Glu Asp Ala Ser  
 50 55 60  
 Glu Gly Gly Ala Glu Glu Gly Ala Gly Gly Ala Gly Gly Ser Ala Gly  
 65 70 75 80  
 Ala Gly Glu Gly Pro Val Ile Thr Ala Leu Thr Pro Met Thr Ile Pro  
 85 90 95  
 Asp Val Phe Pro His Leu Pro Leu Ile Ala Ile Thr Arg Asn Pro Val  
 100 105 110  
 Phe Pro Arg Phe Ile Lys Ile Ile Glu Val Lys Asn Lys Lys Leu Val  
 115 120 125  
 Glu Leu Leu Arg Arg Lys Val Arg Leu Ala Gln Pro Tyr Val Gly Val  
 130 135 140  
 Phe Leu Lys Arg Asp Asp Ser Asn Glu Ser Asp Val Val Glu Ser Leu  
 145 150 155 160  
 Asp Glu Ile Tyr His Thr Gly Thr Phe Ala Gln Ile His Glu Met Gln  
 165 170 175  
 Asp Leu Gly Asp Lys Leu Arg Met Ile Val Met Gly His Arg Arg Val  
 180 185 190  
 His Ile Ser Arg Gln Leu Glu Val Glu Pro Glu Glu Pro Glu Ala Glu  
 195 200 205  
 Asn Lys His Lys Pro Arg Arg Lys Ser Lys Arg Gly Lys Lys Glu Ala  
 210 215 220  
 Glu Asp Glu Leu Ser Ala Arg His Pro Ala Glu Leu Ala Met Glu Pro  
 225 230 235 240  
 Thr Pro Glu Leu Pro Ala Glu Val Leu Met Val Glu Val Glu Asn Val  
 245 250 255  
 Val His Glu Asp Phe Gln Val Thr Glu Glu Val Lys Ala Leu Thr Ala  
 260 265 270  
 Glu Ile Val Lys Thr Ile Arg Asp Ile Ile Ala Leu Asn Pro Leu Tyr  
 275 280 285

Arg Glu Ser Val Leu Gln Met Met Gln Ala Gly Gln Arg Val Val Asp  
 290 295 300  
 Asn Pro Ile Tyr Leu Ser Asp Met Gly Ala Ala Leu Thr Gly Ala Glu  
 305 310 315 320  
 Ser His Glu Leu Gln Asp Val Leu Glu Glu Thr Asn Ile Pro Lys Arg  
 325 330 335  
 Leu Tyr Lys Ala Leu Ser Leu Leu Lys Lys Glu Phe Glu Leu Ser Lys  
 340 345 350  
 Leu Gln Gln Arg Leu Gly Arg Glu Val Glu Glu Lys Ile Lys Gln Thr  
 355 360 365  
 His Arg Lys Tyr Leu Leu Gln Glu Gln Leu Lys Ile Ile Lys Lys Glu  
 370 375 380  
 Leu Gly Leu Glu Lys Asp Asp Lys Asp Ala Ile Glu Glu Lys Phe Arg  
 385 390 395 400  
 Glu Arg Leu Lys Glu Leu Val Val Pro Lys His Val Met Asp Val Val  
 405 410 415  
 Asp Glu Glu Leu Ser Lys Leu Gly Leu Leu Asp Asn His Ser Ser Glu  
 420 425 430  
 Phe Asn Val Thr Arg Asn Tyr Leu Asp Trp Leu Thr Ser Ile Pro Trp  
 435 440 445  
 Gly Lys Tyr Ser Asn Glu Asn Leu Asp Leu Ala Arg Ala Gln Ala Val  
 450 455 460  
 Leu Glu Glu Asp His Tyr Gly Met Glu Asp Val Lys Lys Arg Ile Leu  
 465 470 475 480  
 Glu Phe Ile Ala Val Ser Gln Leu Arg Gly Ser Thr Gln Gly Lys Ile  
 485 490 495  
 Leu Cys Phe Tyr Gly Pro Pro Gly Val Gly Lys Thr Ser Ile Ala Arg  
 500 505 510  
 Ser Ile Ala Arg Ala Leu Asn Arg Glu Tyr Phe Arg Phe Ser Val Gly  
 515 520 525  
 Gly Met Thr Asp Val Ala Glu Ile Lys Gly His Arg Arg Thr Tyr Val  
 530 535 540

Gly Ala Met Pro Gly Lys Ile Ile Gln Cys Leu Lys Lys Thr Lys Thr  
 545 550 555 560  
 Glu Asn Pro Leu Ile Leu Ile Asp Glu Val Asp Lys Ile Gly Arg Gly  
 565 570 575  
 Tyr Gln Gly Asp Pro Ser Ser Ala Leu Leu Glu Leu Leu Asp Pro Glu  
 580 585 590  
 Gln Asn Ala Asn Phe Leu Asp His Tyr Leu Asp Val Pro Val Asp Leu  
 595 600 605  
 Ser Lys Val Leu Phe Ile Cys Thr Ala Asn Val Thr Asp Thr Ile Pro  
 610 615 620  
 Glu Pro Leu Arg Asp Arg Met Glu Met Ile Asn Val Ser Gly Tyr Val  
 625 630 635 640  
 Ala Gln Glu Lys Leu Ala Ile Ala Glu Arg Tyr Leu Val Pro Gln Ala  
 645 650 655  
 Arg Ala Leu Cys Gly Leu Asp Glu Ser Lys Ala Lys Leu Ser Ser Asp  
 660 665 670  
 Val Leu Thr Leu Leu Ile Lys Gln Tyr Cys Arg Glu Ser Gly Val Arg  
 675 680 685  
 Asn Leu Gln Lys Gln Val Glu Lys Val Leu Arg Lys Ser Ala Tyr Lys  
 690 695 700  
 Ile Val Ser Gly Glu Ala Glu Ser Val Glu Val Thr Pro Glu Asn Leu  
 705 710 715 720  
 Gln Asp Phe Val Gly Lys Pro Val Phe Thr Val Glu Arg Met Tyr Asp  
 725 730 735  
 Val Thr Pro Pro Gly Val Val Met Gly Leu Ala Trp Thr Ala Met Gly  
 740 745 750  
 Gly Ser Thr Leu Phe Val Glu Thr Ser Leu Arg Arg Pro Gln Asp Lys  
 755 760 765  
 Asp Ala Lys Gly Asp Lys Asp Gly Ser Leu Glu Val Thr Gly Gln Leu  
 770 775 780  
 Gly Glu Val Met Lys Glu Ser Ala Arg Ile Ala Tyr Thr Phe Ala Arg  
 785 790 795 800

Ala Phe Leu Met Gln His Ala Pro Ala Asn Asp Tyr Leu Val Thr Ser  
805 810 815

His Ile His Leu His Val Pro Glu Gly Ala Thr Pro Lys Asp Gly Pro  
820 825 830

Ser Ala Gly Cys Thr Ile Val Thr Ala Leu Leu Ser Leu Ala Met Gly  
835 840 845

Arg Pro Val Arg Gln Asn Leu Ala Met Thr Gly Glu Val Ser Leu Thr  
850 855 860

Gly Lys Ile Leu Pro Val Gly Gly Ile Lys Glu Lys Thr Ile Ala Ala  
865 870 875 880

Lys Arg Ala Gly Val Thr Cys Ile Ile Leu Pro Ala Glu Asn Lys Lys  
885 890 895

Asp Phe Tyr Asp Leu Ala Ala Phe Ile Thr Glu Gly Leu Glu Val His  
900 905 910

Phe Val Glu His Tyr Arg Glu Ile Phe Asp Ile Ala Phe Pro Asp Glu  
915 920 925

Gln Ala Glu Ala Leu Ala Val Glu Arg  
930 935

<210> 112  
<211> 468  
<212> PRT  
<213> Caenorhabditis elegans

<400> 112

Met Ser Leu Ser Gly Met Ala Ile Arg Arg Leu Ile Thr Lys Gly Val  
1 5 10 15

Ile Pro Val Cys Gln Val Ala Pro Leu Ser Thr Ser Ala Glu Gly Ser  
20 25 30

Thr Asn Leu Lys Glu Val Leu Ser Lys Lys Ile Pro Ala His Asn Ala  
35 40 45

Lys Val Lys Ser Phe Arg Thr Glu His Gly Ser Thr Val Val Gln Asn  
50 55 60

Val Asn Ile Asp Met Ile Tyr Gly Gly Met Arg Ser Met Lys Gly Met  
65 70 75 80

Val Thr Glu Thr Ser Val Leu Asp Pro Glu Glu Gly Ile Arg Phe Arg  
 85 90 95  
 Gly Tyr Ser Ile Pro Glu Cys Gln Lys Leu Leu Pro Lys Ala Lys Gly  
 100 105 110  
 Gly Glu Glu Pro Leu Pro Glu Ala Ile Trp Trp Leu Leu Cys Thr Gly  
 115 120 125  
 Asp Val Pro Ser Glu Ala Gln Thr Ala Ala Ile Thr Lys Glu Trp Asn  
 130 135 140  
 Ala Arg Ala Asp Leu Pro Thr His Val Val Arg Met Leu Asp Asn Phe  
 145 150 155 160  
 Pro Asp Asn Leu His Pro Met Ala Gln Phe Ile Ala Ala Ile Ala Ala  
 165 170 175  
 Leu Asn Asn Glu Ser Lys Phe Ala Gly Ala Tyr Ala Arg Gly Val Ala  
 180 185 190  
 Lys Ala Ser Tyr Trp Glu Tyr Ala Tyr Glu Asp Ser Met Asp Leu Leu  
 195 200 205  
 Ala Lys Leu Pro Thr Val Ala Ala Ile Ile Tyr Arg Asn Leu Tyr Arg  
 210 215 220  
 Asp Gly Ser Ala Val Ser Val Ile Asp Pro Lys Lys Asp Trp Ser Ala  
 225 230 235 240  
 Asn Phe Ser Ser Met Leu Gly Tyr Asp Asp Pro Leu Phe Ala Glu Leu  
 245 250 255  
 Met Arg Leu Tyr Leu Val Ile His Ser Asp His Glu Gly Gly Asn Val  
 260 265 270  
 Ser Ala His Thr Ser His Leu Val Gly Ser Ala Leu Ser Asp Pro Tyr  
 275 280 285  
 Leu Ser Phe Ser Ala Ala Met Ala Gly Leu Ala Gly Pro Leu His Gly  
 290 295 300  
 Leu Ala Asn Gln Glu Val Leu Val Phe Leu Asn Lys Ile Val Gly Glu  
 305 310 315 320  
 Ile Gly Phe Asn Tyr Thr Glu Glu Gln Leu Lys Glu Trp Val Trp Lys  
 325 330 335

His Leu Lys Ser Gly Gln Val Val Pro Gly Tyr Gly His Ala Val Leu  
340 345 350

Arg Lys Thr Asp Pro Arg Tyr Glu Cys Gln Arg Glu Phe Ala Leu Lys  
355 360 365

His Leu Pro Asn Asp Asp Leu Phe Lys Leu Val Ser Thr Leu Tyr Lys  
370 375 380

Ile Thr Pro Gly Ile Leu Leu Glu Gln Gly Lys Ala Lys Asn Pro Trp  
385 390 395 400

Pro Asn Val Asp Ser His Ser Gly Val Leu Leu Gln Tyr Phe Gly Met  
405 410 415

Thr Glu Met Ser Phe Tyr Thr Val Leu Phe Gly Val Ser Arg Ala Leu  
420 425 430

Gly Cys Leu Ser Gln Leu Ile Trp Ala Arg Gly Met Gly Leu Pro Leu  
435 440 445

Glu Arg Pro Lys Ser His Ser Thr Asp Gly Leu Ile Lys Leu Ala Leu  
450 455 460

Ala Ala Lys Lys  
465

<210> 113  
<211> 102  
<212> PRT  
<213> Homo sapiens

<400> 113

Met Ala Gly Gln Ala Phe Arg Lys Phe Leu Pro Leu Phe Asp Arg Val  
1 5 10 15

Leu Val Glu Arg Ser Ala Ala Glu Thr Val Thr Lys Gly Gly Ile Met  
20 25 30

Leu Pro Glu Lys Ser Gln Gly Lys Val Leu Gln Ala Thr Val Val Ala  
35 40 45

Val Gly Ser Gly Ser Lys Gly Lys Gly Gly Glu Ile Gln Pro Val Ser  
50 55 60

Val Lys Val Gly Asp Lys Val Leu Leu Pro Glu Tyr Gly Gly Thr Lys  
65 70 75 80

Val Val Leu Asp Asp Lys Asp Tyr Phe Leu Phe Arg Asp Gly Asp Ile  
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85

90

95

Leu Gly Lys Tyr Val Asp  
100

<210> 114  
<211> 604  
<212> PRT  
<213> Homo sapiens

<400> 114

Met Gly Ala Ala Leu Gly Thr Gly Thr Arg Leu Ala Pro Trp Pro Gly  
1 5 10 15

Arg Ala Cys Gly Ala Leu Pro Arg Trp Thr Pro Thr Ala Pro Ala Gln  
20 25 30

Gly Cys His Ser Lys Pro Gly Pro Ala Arg Pro Val Pro Leu Lys Lys  
35 40 45

Arg Gly Tyr Asp Val Thr Arg Asn Pro His Leu Asn Lys Gly Met Ala  
50 55 60

Phe Thr Leu Glu Glu Arg Leu Gln Leu Gly Ile His Gly Leu Ile Pro  
65 70 75 80

Pro Cys Phe Leu Ser Gln Asp Val Gln Leu Leu Arg Ile Met Arg Tyr  
85 90 95

Tyr Glu Arg Gln Gln Ser Asp Leu Asp Lys Tyr Ile Ile Leu Met Thr  
100 105 110

Leu Gln Asp Arg Asn Glu Lys Leu Phe Tyr Arg Val Leu Thr Ser Asp  
115 120 125

Val Glu Lys Phe Met Pro Ile Val Tyr Thr Pro Thr Val Gly Leu Ala  
130 135 140

Cys Gln His Tyr Gly Leu Thr Phe Arg Arg Pro Arg Gly Leu Phe Ile  
145 150 155 160

Thr Ile His Asp Lys Gly His Leu Ala Thr Met Leu Asn Ser Trp Pro  
165 170 175

Glu Asp Asn Ile Lys Ala Val Val Val Thr Asp Gly Glu Arg Ile Leu  
180 185 190

Gly Leu Gly Asp Leu Gly Cys Tyr Gly Met Gly Ile Pro Val Gly Lys  
195 200 205



Leu Ala Leu Tyr Thr Ala Cys Gly Gly Val Asn Pro Gln Gln Cys Leu  
 210 215 220  
 Pro Val Leu Leu Asp Val Gly Thr Asn Asn Glu Glu Leu Leu Arg Asp  
 225 230 235 240  
 Pro Leu Tyr Ile Gly Leu Lys His Gln Arg Val His Gly Lys Ala Tyr  
 245 250 255  
 Asp Asp Leu Leu Asp Glu Phe Met Gln Ala Val Thr Asp Lys Phe Gly  
 260 265 270  
 Ile Asn Cys Leu Ile Gln Phe Glu Asp Phe Ala Asn Ala Asn Ala Phe  
 275 280 285  
 Arg Leu Leu Asn Lys Tyr Arg Asn Lys Tyr Cys Met Phe Asn Asp Asp  
 290 295 300  
 Ile Gln Gly Thr Ala Ser Val Ala Val Ala Gly Ile Leu Ala Ala Leu  
 305 310 315 320  
 Arg Ile Thr Asn Asn Lys Leu Ser Asn His Val Phe Val Phe Gln Gly  
 325 330 335  
 Ala Gly Glu Ala Ala Met Gly Ile Ala His Leu Leu Val Met Ala Leu  
 340 345 350  
 Glu Lys Glu Gly Val Pro Lys Ala Glu Ala Thr Arg Lys Ile Trp Met  
 355 360 365  
 Val Asp Ser Lys Gly Leu Ile Val Lys Gly Arg Ser His Leu Asn His  
 370 375 380  
 Glu Lys Glu Met Phe Ala Gln Asp His Pro Glu Val Asn Ser Leu Glu  
 385 390 395 400  
 Glu Val Val Arg Leu Val Lys Pro Thr Ala Ile Ile Gly Val Ala Ala  
 405 410 415  
 Ile Ala Gly Ala Phe Thr Glu Gln Ile Leu Arg Asp Met Ala Ser Phe  
 420 425 430  
 His Glu Arg Pro Ile Ile Phe Ala Leu Ser Asn Pro Thr Ser Lys Ala  
 435 440 445  
 Glu Cys Thr Ala Glu Lys Cys Tyr Arg Val Thr Glu Gly Arg Gly Ile  
 450 455 460

Phe Ala Ser Gly Ser Pro Phe Lys Ser Val Thr Leu Glu Asp Gly Lys  
465 470 475 480

Thr Phe Ile Pro Gly Gln Gly Asn Asn Ala Tyr Val Phe Pro Gly Val  
485 490 495

Ala Leu Gly Val Ile Ala Gly Gly Ile Arg His Ile Pro Asp Glu Ile  
500 505 510

Phe Leu Leu Thr Ala Glu Gln Ile Ala Gln Glu Val Ser Glu Gln His  
515 520 525

Leu Ser Gln Gly Arg Leu Tyr Pro Pro Leu Ser Thr Ile Arg Asp Val  
530 535 540

Ser Leu Arg Ile Ala Ile Lys Val Leu Asp Tyr Ala Tyr Lys His Asn  
545 550 555 560

Leu Ala Ser Tyr Tyr Pro Glu Pro Lys Asp Lys Glu Ala Phe Val Arg  
565 570 575

Ser Leu Val Tyr Thr Pro Asp Tyr Asp Ser Phe Thr Leu Asp Ser Tyr  
580 585 590

Thr Trp Pro Lys Glu Ala Met Asn Val Gln Thr Val  
595 600

<210> 115  
<211> 494  
<212> PRT  
<213> Mus musculus

<400> 115

Met Ala Pro Arg Cys Trp His Trp Trp Arg Trp Ser Ala Trp Ser Gly  
1 5 10 15

Leu Arg Pro Ser Pro Ser Arg Ser Thr Pro Thr Pro Gly Phe Cys Gln  
20 25 30

Lys Phe Ser Thr Gln Glu Lys Thr Pro Gln Ile Cys Val Val Gly Ser  
35 40 45

Gly Pro Ala Gly Phe Tyr Thr Ala Gln His Leu Leu Lys His His Thr  
50 55 60

His Ala His Val Asp Ile Tyr Glu Lys Gln Leu Val Pro Phe Gly Leu  
65 70 75 80

Val Arg Phe Gly Val Ala Pro Asp His Pro Glu Val Lys Asn Val Ile  
85 90 95  
Asn Thr Phe Thr Gln Thr Ala Arg Ser Asp Arg Cys Ala Phe Gln Gly  
100 105 110  
Asn Val Val Val Gly Arg Asp Val Ser Val Pro Glu Leu Arg Glu Ala  
115 120 125  
Tyr His Ala Val Val Leu Ser Tyr Gly Ala Glu Asp His Gln Pro Leu  
130 135 140  
Gly Ile Pro Gly Glu Glu Leu Pro Gly Val Val Ser Ala Arg Ala Phe  
145 150 155 160  
Val Gly Trp Tyr Asn Gly Leu Pro Glu Asn Gln Glu Leu Ala Pro Asp  
165 170 175  
Leu Ser Cys Asp Thr Ala Val Ile Leu Gly Gln Gly Asn Val Ala Leu  
180 185 190  
Asp Val Ala Arg Ile Leu Leu Thr Pro Pro Glu His Leu Glu Lys Thr  
195 200 205  
Asp Ile Thr Glu Ala Ala Leu Gly Ala Leu Arg Gln Ser Arg Val Lys  
210 215 220  
Thr Val Trp Ile Val Gly Arg Arg Gly Pro Leu Gln Val Ala Phe Thr  
225 230 235 240  
Ile Lys Glu Leu Arg Glu Met Ile Gln Leu Pro Gly Thr Arg Pro Ile  
245 250 255  
Leu Asp Pro Ser Asp Phe Leu Gly Leu Gln Asp Arg Ile Lys Asp Val  
260 265 270  
Pro Arg Pro Arg Arg Arg Leu Thr Glu Leu Leu Leu Arg Thr Ala Thr  
275 280 285  
Glu Lys Pro Gly Val Glu Glu Ala Ala Arg Gln Ala Leu Ala Ser Arg  
290 295 300  
Ala Trp Gly Leu Arg Phe Phe Arg Ser Pro Gln Gln Val Leu Pro Thr  
305 310 315 320  
Pro Asp Gly Gln Arg Val Ala Gly Ile Arg Leu Ala Val Thr Ser Leu  
325 330 335

Glu Gly Val Gly Glu Ser Thr Arg Ala Val Pro Thr Gly Asp Val Glu  
340 345 350

Asp Leu Pro Cys Gly Leu Leu Leu Ser Ser Val Gly Tyr Lys Ser Arg  
355 360 365

Pro Ile Asp Pro Ser Val Pro Phe Asp Pro Lys Leu Gly Val Ile Pro  
370 375 380

Asn Thr Glu Gly Arg Val Val Asn Val Pro Gly Leu Tyr Cys Ser Gly  
385 390 395 400

Trp Val Lys Arg Gly Pro Thr Gly Val Ile Thr Thr Thr Met Thr Asp  
405 410 415

Ser Phe Leu Thr Ser Gln Ala Leu Leu Glu Asp Leu Lys Ala Gly Leu  
420 425 430

Leu Pro Ser Gly Pro Arg Pro Gly Tyr Val Ala Ile Gln Ala Leu Leu  
435 440 445

Ser Asn Arg Gly Val Arg Pro Val Ser Phe Ser Asp Trp Glu Lys Leu  
450 455 460

Asp Ala Glu Glu Val Ser Arg Gly Gln Gly Thr Gly Lys Pro Arg Glu  
465 470 475 480

Lys Leu Val Asp Arg Arg Glu Met Leu Arg Leu Leu Gly His  
485 490

<210> 116

<211> 482

<212> PRT

<213> Mus musculus

<400> 116

Met Ala Ala Ala Arg Val Leu Arg Thr Trp Ser Gln Asn Ala Val Arg  
1 5 10 15

Leu Thr Cys Val Arg Tyr Phe Gln Thr Phe Asn Ser Ala Arg Val Leu  
20 25 30

Lys Pro Lys Cys Val Cys Ser Val Gly Tyr Pro Leu Phe Lys Tyr Ser  
35 40 45

Gln Pro Arg His Ser Leu Arg Thr Ala Ala Val Leu Gln Gly Gln Val  
50 55 60

Val Gln Phe Lys Leu Ser Asp Ile Gly Glu Gly Ile Arg Glu Val Thr  
 65 70 75 80  
 Ile Lys Glu Trp Tyr Val Lys Glu Gly Asp Thr Val Ser Gln Phe Asp  
 85 90 95  
 Ser Ile Cys Glu Val Gln Ser Asp Lys Ala Ser Val Thr Ile Thr Ser  
 100 105 110  
 Arg Tyr Asp Gly Val Ile Lys Arg Leu Tyr Tyr Asn Leu Asp Asp Ile  
 115 120 125  
 Ala Tyr Val Gly Lys Pro Leu Ile Asp Ile Glu Thr Glu Ala Leu Lys  
 130 135 140  
 Asp Ser Glu Glu Asp Val Val Glu Thr Pro Ala Val Ser His Asp Glu  
 145 150 155 160  
 His Thr His Gln Glu Ile Lys Gly Gln Lys Thr Leu Ala Thr Pro Ala  
 165 170 175  
 Val Arg Arg Leu Ala Met Glu Asn Asn Ile Lys Leu Ser Glu Val Val  
 180 185 190  
 Gly Ser Gly Lys Asp Gly Arg Ile Leu Lys Glu Asp Ile Leu Ser Phe  
 195 200 205  
 Leu Glu Lys Gln Thr Gly Ala Ile Leu Pro Pro Ser Pro Lys Ser Glu  
 210 215 220  
 Ile Thr Pro Pro Pro Pro Gln Pro Lys Asp Arg Thr Phe Pro Thr Pro  
 225 230 235 240  
 Ile Ala Lys Pro Pro Val Phe Thr Gly Lys Asp Arg Thr Glu Pro Val  
 245 250 255  
 Thr Gly Phe Gln Lys Ala Met Val Lys Thr Met Ser Ala Ala Leu Lys  
 260 265 270  
 Ile Pro His Phe Gly Tyr Cys Asp Glu Ile Asp Leu Thr Gln Leu Val  
 275 280 285  
 Lys Leu Arg Glu Glu Leu Lys Pro Val Ala Leu Ala Arg Gly Ile Lys  
 290 295 300  
 Leu Ser Phe Met Pro Phe Phe Leu Lys Ala Ala Ser Leu Gly Leu Leu  
 305 310 315 320

Gln Phe Pro Ile Leu Asn Ala Ser Val Asp Glu Asn Cys Gln Asn Ile  
325 330 335

Thr Tyr Lys Ala Ser His Asn Ile Gly Ile Ala Met Asp Thr Glu Leu  
340 345 350

Gly Leu Ile Val Pro Asn Val Lys Asn Val Gln Val Arg Ser Val Phe  
355 360 365

Gly Ile Gly Met Glu Leu Asn Arg Leu Gln Lys Leu Gly Ser Ser Gly  
370 375 380

Gln Leu Gly Thr Thr Asp Leu Thr Gly Gly Thr Phe Thr Leu Ser Asn  
385 390 395 400

Ile Gly Ser Ile Gly Gly Thr Tyr Ala Lys Pro Val Ile Leu Pro Pro  
405 410 415

Glu Val Ala Ile Gly Ala Leu Gly Ala Ile Lys Ala Leu Pro Arg Phe  
420 425 430

Asp Gln Lys Gly Asp Val Tyr Lys Ala Gln Ile Met Asn Val Ser Trp  
435 440 445

Ser Ala Asp His Arg Val Ile Asp Gly Ala Thr Met Ser Arg Phe Ser  
450 455 460

Asn Leu Trp Lys Ser Tyr Leu Glu Asn Pro Ala Phe Met Leu Leu Asp  
465 470 475 480

Leu Lys

<210> 117  
<211> 442  
<212> PRT  
<213> Mus musculus

<400> 117

Met Ser Ala Ala Lys Ile Trp Arg Pro Ser Arg Gly Leu Arg Gln Ala  
1 5 10 15

Ala Leu Leu Leu Leu Gly Arg Ser Gly Val Arg Gly Leu Ala Arg Ser  
20 25 30

His Pro Ser Arg Gln Gln Gln Gln Gln Phe Pro Ser Leu Asp Asp Lys  
35 40 45

Pro Gln Phe Pro Gly Ala Ser Ala Glu Phe Val Asp Lys Leu Glu Phe  
Page 218

50

55

60

Ile Gln Pro Asn Val Ile Ser Gly Ile Pro Ile Tyr Arg Val Met Asp  
65 70 75 80

Arg Gln Gly Gln Ile Ile Asn Pro Ser Glu Asp Pro His Leu Pro Gln  
85 90 95

Glu Glu Val Leu Lys Phe Tyr Arg Ser Met Thr Leu Leu Asn Thr Met  
100 105 110

Asp Arg Ile Leu Tyr Glu Ser Gln Arg Gln Gly Arg Ile Ser Phe Tyr  
115 120 125

Met Thr Asn Tyr Gly Glu Glu Gly Thr His Val Gly Ser Ala Ala Ala  
130 135 140

Leu Glu Arg Thr Asp Leu Val Phe Gly Gln Tyr Arg Glu Ala Gly Val  
145 150 155 160

Leu Met Tyr Arg Asp Tyr Pro Leu Glu Leu Phe Met Ser Gln Cys Tyr  
165 170 175

Gly Asn Val Asn Asp Pro Gly Lys Gly Arg Gln Met Pro Val His Tyr  
180 185 190

Gly Cys Lys Glu Arg His Phe Val Thr Ile Ser Ser Pro Leu Ala Thr  
195 200 205

Gln Ile Pro Gln Ala Val Gly Ala Ala Tyr Ala Ala Lys Arg Ala Asn  
210 215 220

Ala Asn Arg Ile Val Ile Cys Tyr Phe Gly Glu Gly Ala Ala Ser Glu  
225 230 235 240

Gly Asp Ala His Ala Gly Phe Asn Phe Ala Ala Thr Leu Glu Cys Pro  
245 250 255

Ile Ile Phe Phe Cys Arg Asn Asn Gly Tyr Ala Ile Ser Thr Pro Thr  
260 265 270

Ser Glu Gln Tyr Arg Gly Asp Gly Ile Ala Ala Arg Gly Pro Gly Tyr  
275 280 285

Gly Ile Lys Ser Ile Arg Val Asp Gly Asn Asp Val Phe Ala Val Tyr  
290 295 300

Asn Ala Thr Lys Glu Ala Arg Arg Arg Ala Val Ala Glu Asn Gln Pro  
Page 219

305                      310                      315                      320  
 Phe Leu Ile Glu Ala Met Thr Tyr Arg Ile Gly His His Ser Thr Ser  
                                  325                                   330                                   335  
 Asp Asp Ser Ser Ala Tyr Arg Ser Val Asp Glu Val Asn Tyr Trp Asp  
                                  340                                   345                                   350  
 Lys Gln Asp His Pro Ile Ser Arg Leu Arg Gln Tyr Leu Leu Asn Gln  
                                  355                                   360                                   365  
 Gly Trp Trp Asp Glu Glu Gln Glu Lys Ala Trp Arg Lys Gln Ser Arg  
                                  370                                   375                                   380  
 Lys Lys Val Met Glu Ala Phe Glu Gln Ala Glu Arg Lys Leu Lys Pro  
                                  385                                   390                                   395                                   400  
 Asn Pro Ser Leu Leu Phe Ser Asp Val Tyr Gln Glu Met Pro Ala Gln  
    405     410     415  
 Leu Arg Arg Gln Gln Glu Ser Leu Ala Arg His Leu Gln Thr Tyr Gly  
    420     425     430  
 Glu His Tyr Pro Leu Asp His Phe Glu Lys  
    435     440

<210> 118  
 <211> 520  
 <212> PRT  
 <213> Homo sapiens

<400> 118

Met Ala Ala Leu Lys Leu Leu Ser Ser Gly Leu Arg Leu Cys Ala Ser  
 1                                   5                                   10                                   15  
 Ala Arg Gly Ser Gly Ala Thr Trp Tyr Lys Gly Cys Val Cys Ser Phe  
                                  20                                   25                                   30  
 Ser Thr Ser Ala His Arg His Thr Lys Phe Tyr Thr Asp Pro Val Glu  
                                  35                                   40                                   45  
 Ala Val Lys Asp Ile Pro Asp Gly Ala Thr Val Leu Val Gly Gly Phe  
                                  50                                   55                                   60  
 Gly Leu Cys Gly Ile Pro Glu Asn Leu Ile Asp Ala Leu Leu Lys Thr  
 65                                   70                                   75                                   80  
 Gly Val Lys Gly Leu Thr Ala Val Ser Asn Asn Ala Gly Val Asp Asn  
    85     90     95



Phe Gly Leu Gly Leu Leu Leu Arg Ser Lys Gln Ile Lys Arg Met Val  
100 105 110  
Ser Ser Tyr Val Gly Glu Asn Ala Glu Phe Glu Arg Gln Tyr Leu Ser  
115 120 125  
Gly Glu Leu Glu Val Glu Leu Thr Pro Gln Gly Thr Leu Ala Glu Arg  
130 135 140  
Ile Arg Ala Gly Gly Ala Gly Val Pro Ala Phe Tyr Thr Pro Thr Gly  
145 150 155 160  
Tyr Gly Thr Leu Val Gln Glu Gly Gly Ser Pro Ile Lys Tyr Asn Lys  
165 170 175  
Asp Gly Ser Val Ala Ile Ala Ser Lys Pro Arg Glu Val Arg Glu Phe  
180 185 190  
Asn Gly Gln His Phe Ile Leu Glu Glu Ala Ile Thr Gly Asp Phe Ala  
195 200 205  
Leu Val Lys Ala Trp Lys Ala Asp Arg Ala Gly Asn Val Ile Phe Arg  
210 215 220  
Lys Ser Ala Arg Asn Phe Asn Leu Pro Met Cys Lys Ala Ala Glu Thr  
225 230 235 240  
Thr Val Val Glu Val Glu Glu Ile Val Asp Ile Gly Ala Phe Ala Pro  
245 250 255  
Glu Asp Ile His Ile Pro Gln Ile Tyr Val His Arg Leu Ile Lys Gly  
260 265 270  
Glu Lys Tyr Glu Lys Arg Ile Glu Arg Leu Ser Ile Arg Lys Glu Gly  
275 280 285  
Asp Gly Glu Ala Lys Ser Ala Lys Pro Gly Asp Asp Val Arg Glu Arg  
290 295 300  
Ile Ile Lys Arg Ala Ala Leu Glu Phe Glu Asp Gly Met Tyr Ala Asn  
305 310 315 320  
Leu Gly Ile Gly Ile Pro Leu Leu Ala Ser Asn Phe Ile Ser Pro Asn  
325 330 335  
Ile Thr Val His Leu Gln Ser Glu Asn Gly Val Leu Gly Leu Gly Pro  
340 345 350

Tyr Pro Arg Gln His Glu Ala Asp Ala Asp Leu Ile Asn Ala Gly Lys  
355 360 365

Glu Thr Val Thr Ile Leu Pro Gly Ala Ser Phe Phe Ser Ser Asp Glu  
370 375 380

Ser Phe Ala Met Ile Arg Gly Gly His Val Asp Leu Thr Met Leu Gly  
385 390 395 400

Ala Met Gln Val Ser Lys Tyr Gly Asp Leu Ala Asn Trp Met Ile Pro  
405 410 415

Gly Lys Met Val Lys Gly Met Gly Gly Ala Met Asp Leu Val Ser Ser  
420 425 430

Ala Lys Thr Lys Val Val Val Thr Met Glu His Ser Ala Lys Gly Asn  
435 440 445

Ala His Lys Ile Met Glu Lys Cys Thr Leu Pro Leu Thr Gly Lys Gln  
450 455 460

Cys Val Asn Arg Ile Ile Thr Glu Lys Ala Val Phe Asp Val Asp Lys  
465 470 475 480

Lys Lys Gly Leu Thr Leu Ile Glu Leu Trp Glu Gly Leu Thr Val Asp  
485 490 495

Asp Val Gln Lys Ser Thr Gly Cys Asp Phe Ala Val Ser Pro Lys Leu  
500 505 510

Met Pro Met Gln Gln Ile Ala Asn  
515 520

<210> 119  
<211> 221  
<212> PRT  
<213> Caenorhabditis elegans

<400> 119

Met Leu Gln Asn Thr Val Arg Cys Val Ser Lys Leu Val Gln Pro Ile  
1 5 10 15

Thr Gly Val Ala Ala Val Arg Ser Lys His Ser Leu Pro Asp Leu Pro  
20 25 30

Tyr Asp Tyr Ala Asp Leu Glu Pro Val Ile Ser His Glu Ile Met Gln  
35 40 45

Leu His His Gln Lys His His Ala Thr Tyr Val Asn Asn Leu Asn Gln  
50 55 60

Ile Glu Glu Lys Leu His Glu Ala Val Ser Lys Gly Asn Val Lys Glu  
65 70 75 80

Ala Ile Ala Leu Gln Pro Ala Leu Lys Phe Asn Gly Gly Gly His Ile  
85 90 95

Asn His Ser Ile Phe Trp Thr Asn Leu Ala Lys Asp Gly Gly Glu Pro  
100 105 110

Ser Ala Glu Leu Leu Thr Ala Ile Lys Ser Asp Phe Gly Ser Leu Asp  
115 120 125

Asn Leu Gln Lys Gln Leu Ser Ala Ser Thr Val Ala Val Gln Gly Ser  
130 135 140

Gly Trp Gly Trp Leu Gly Tyr Cys Pro Lys Gly Lys Ile Leu Lys Val  
145 150 155 160

Ala Thr Cys Ala Asn Gln Asp Pro Leu Glu Ala Thr Thr Gly Leu Val  
165 170 175

Pro Leu Phe Gly Ile Asp Val Trp Glu His Ala Tyr Tyr Leu Gln Tyr  
180 185 190

Lys Asn Val Arg Pro Asp Tyr Val Asn Ala Ile Trp Lys Ile Ala Asn  
195 200 205

Trp Lys Asn Val Ser Glu Arg Phe Ala Lys Ala Gln Gln  
210 215 220

<210> 120

<211> 218

<212> PRT

<213> Caenorhabditis elegans

<400> 120

Met Leu Gln Ser Thr Ala Arg Thr Ala Ser Lys Leu Val Gln Pro Val  
1 5 10 15

Ala Gly Val Leu Ala Val Arg Ser Lys His Thr Leu Pro Asp Leu Pro  
20 25 30

Phe Asp Tyr Ala Asp Leu Glu Pro Val Ile Ser His Glu Ile Met Gln  
35 40 45

Leu His His Gln Lys His His Ala Thr Tyr Val Asn Asn Leu Asn Gln  
50 55 60

Ile Glu Glu Lys Leu His Glu Ala Val Ser Lys Gly Asn Leu Lys Glu  
65 70 75 80

Ala Ile Ala Leu Gln Pro Ala Leu Lys Phe Asn Gly Gly Gly His Ile  
85 90 95

Asn His Ser Ile Phe Trp Thr Asn Leu Ala Lys Asp Gly Gly Glu Pro  
100 105 110

Ser Lys Glu Leu Met Asp Thr Ile Lys Arg Asp Phe Gly Ser Leu Asp  
115 120 125

Asn Leu Gln Lys Arg Leu Ser Asp Ile Thr Ile Ala Val Gln Gly Ser  
130 135 140

Gly Trp Gly Trp Leu Gly Tyr Cys Lys Lys Asp Lys Ile Leu Lys Ile  
145 150 155 160

Ala Thr Cys Ala Asn Gln Asp Pro Leu Glu Gly Met Val Pro Leu Phe  
165 170 175

Gly Ile Asp Val Trp Glu His Ala Tyr Tyr Leu Gln Tyr Lys Asn Val  
180 185 190

Arg Pro Asp Tyr Val His Ala Ile Trp Lys Ile Ala Asn Trp Lys Asn  
195 200 205

Ile Ser Glu Arg Phe Ala Asn Ala Arg Gln  
210 215

<210> 121  
<211> 587  
<212> PRT  
<213> Homo sapiens

<400> 121

Met Val Thr Ala Ala Met Leu Leu Gln Cys Cys Pro Val Leu Ala Arg  
1 5 10 15

Gly Pro Thr Ser Leu Leu Gly Lys Val Val Lys Thr His Gln Phe Leu  
20 25 30

Phe Gly Ile Gly Arg Cys Pro Ile Leu Ala Thr Gln Gly Pro Asn Cys  
35 40 45

Ser Gln Ile His Leu Lys Ala Thr Lys Ala Gly Gly Asp Ser Pro Ser  
Page 224

50

55

60

Trp Ala Lys Gly His Cys Pro Phe Met Leu Ser Glu Leu Gln Asp Gly  
65 70 75 80

Lys Ser Lys Ile Val Gln Lys Ala Ala Pro Glu Val Gln Glu Asp Val  
85 90 95

Lys Ala Phe Lys Thr Asp Leu Pro Ser Ser Leu Val Ser Val Ser Leu  
100 105 110

Arg Lys Pro Phe Ser Gly Pro Gln Glu Gln Glu Gln Ile Ser Gly Lys  
115 120 125

Val Thr His Leu Ile Gln Asn Asn Met Pro Gly Asn Tyr Val Phe Ser  
130 135 140

Tyr Asp Gln Phe Phe Arg Asp Lys Ile Met Glu Lys Lys Gln Asp His  
145 150 155 160

Thr Tyr Arg Val Phe Lys Thr Val Asn Arg Trp Ala Asp Ala Tyr Pro  
165 170 175

Phe Ala Gln His Phe Ser Glu Ala Ser Val Ala Ser Lys Asp Val Ser  
180 185 190

Val Trp Cys Ser Asn Asp Tyr Leu Gly Met Ser Arg His Pro Gln Val  
195 200 205

Leu Gln Ala Thr Gln Glu Thr Leu Gln Arg His Gly Ala Gly Ala Gly  
210 215 220

Gly Thr Arg Asn Ile Ser Gly Thr Ser Lys Phe His Val Glu Leu Glu  
225 230 235 240

Gln Glu Leu Ala Glu Leu His Gln Lys Asp Ser Ala Leu Leu Phe Ser  
245 250 255

Ser Cys Phe Val Ala Asn Asp Ser Thr Leu Phe Thr Leu Ala Lys Ile  
260 265 270

Leu Pro Gly Cys Glu Ile Tyr Ser Asp Ala Gly Asn His Ala Ser Met  
275 280 285

Ile Gln Gly Ile Arg Asn Ser Gly Ala Ala Lys Phe Val Phe Arg His  
290 295 300

Asn Asp Pro Asp His Leu Lys Lys Leu Leu Glu Lys Ser Asn Pro Lys  
Page 225

305		310		315		320
Ile Pro Lys Ile	Val 325	Ala Phe Glu Thr	Val 330	His Ser Met Asp	Gly 335	Ala
Ile Cys Pro	Leu 340	Glu Glu Leu Cys	Asp 345	Val Ser His Gln	Tyr 350	Gly Ala
Leu Thr	Phe 355	Val Asp Glu Val	His 360	Ala Val Gly Leu	Tyr 365	Gly Ser Arg
Gly Ala	Gly 370	Ile Gly Glu	Arg 375	Asp Gly Ile Met	His 380	Lys Ile Asp Ile
Ile 385	Ser Gly Thr Leu	Gly 390	Lys Ala Phe Gly	Cys 395	Val Gly Gly Tyr	Ile 400
Ala Ser Thr Arg	Asp 405	Leu Val Asp Met	Val 410	Arg Ser Tyr Ala	Ala 415	Gly
Phe Ile Phe	Thr 420	Thr Ser Leu Pro	Pro 425	Met Val Leu Ser	Gly 430	Ala Leu
Glu Ser	Val 435	Arg Leu Leu Lys	Gly 440	Glu Glu Gly Gln	Ala 445	Leu Arg Arg
Ala His	Gln 450	Arg Asn Val	Lys 455	His Met Arg Gln	Leu 460	Leu Met Asp Arg
Gly 465	Leu Pro Val Ile	Pro 470	Cys Pro Ser His	Ile 475	Ile Pro Ile Arg	Val 480
Gly Asn Ala Ala	Leu 485	Asn Ser Lys Leu	Cys 490	Asp Leu Leu Leu	Ser 495	Lys
His Gly Ile	Tyr 500	Val Gln Ala Ile	Asn 505	Tyr Pro Thr Val	Pro 510	Arg Gly
Glu Glu	Leu 515	Leu Arg Leu Ala	Pro 520	Ser Pro His His	Ser 525	Pro Gln Met
Met	Glu 530	Asp Phe Val Glu	Lys 535	Leu Leu Leu Ala	Trp 540	Thr Ala Val Gly
Leu 545	Pro Leu Gln Asp	Val 550	Ser Val Ala Ala	Cys 555	Asn Phe Cys Arg	Arg 560
Pro Val His Phe	Glu Leu Met	Ser Glu Trp	Glu Arg Ser Tyr	Phe Gly		

565

570

575

Asn Met Gly Pro Gln Tyr Val Thr Thr Tyr Ala  
580 585

&lt;210&gt; 122

&lt;211&gt; 640

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 122

Met Glu Ser Val Val Arg Arg Cys Pro Phe Leu Ser Arg Val Pro Gln  
1 5 10 15

Ala Phe Leu Gln Lys Ala Gly Lys Ser Leu Leu Phe Tyr Ala Gln Asn  
20 25 30

Cys Pro Lys Met Met Glu Val Gly Ala Lys Pro Ala Pro Arg Ala Leu  
35 40 45

Ser Thr Ala Ala Val His Tyr Gln Gln Ile Lys Glu Thr Pro Pro Ala  
50 55 60

Ser Glu Lys Asp Lys Thr Ala Lys Ala Lys Val Gln Gln Thr Pro Asp  
65 70 75 80

Gly Ser Gln Gln Ser Pro Asp Gly Thr Gln Leu Pro Ser Gly His Pro  
85 90 95

Leu Pro Ala Thr Ser Gln Gly Thr Ala Ser Lys Cys Pro Phe Leu Ala  
100 105 110

Ala Gln Met Asn Gln Arg Gly Ser Ser Val Phe Cys Lys Ala Ser Leu  
115 120 125

Glu Leu Gln Glu Asp Val Gln Glu Met Asn Ala Val Arg Lys Glu Val  
130 135 140

Ala Glu Thr Ser Ala Gly Pro Ser Val Val Ser Val Lys Thr Asp Gly  
145 150 155 160

Gly Asp Pro Ser Gly Leu Leu Lys Asn Phe Gln Asp Ile Met Gln Lys  
165 170 175

Gln Arg Pro Glu Arg Val Ser His Leu Leu Gln Asp Asn Leu Pro Lys  
180 185 190

Ser Val Ser Thr Phe Gln Tyr Asp Arg Phe Phe Glu Lys Lys Ile Asp  
195 200 205

Glu Lys Lys Asn Asp His Thr Tyr Arg Val Phe Lys Thr Val Asn Arg  
 210 215 220  
 Arg Ala His Ile Phe Pro Met Ala Asp Asp Tyr Ser Asp Ser Leu Ile  
 225 230 235 240  
 Thr Lys Lys Gln Val Ser Val Trp Cys Ser Asn Asp Tyr Leu Gly Met  
 245 250 255  
 Ser Arg His Pro Arg Val Cys Gly Ala Val Met Asp Thr Leu Lys Gln  
 260 265 270  
 His Gly Ala Gly Ala Gly Gly Thr Arg Asn Ile Ser Gly Thr Ser Lys  
 275 280 285  
 Phe His Val Asp Leu Glu Arg Glu Leu Ala Asp Leu His Gly Lys Asp  
 290 295 300  
 Ala Ala Leu Leu Phe Ser Ser Cys Phe Val Ala Asn Asp Ser Thr Leu  
 305 310 315 320  
 Phe Thr Leu Ala Lys Met Met Pro Gly Cys Glu Ile Tyr Ser Asp Ser  
 325 330 335  
 Gly Asn His Ala Ser Met Ile Gln Gly Ile Arg Asn Ser Arg Val Pro  
 340 345 350  
 Lys Tyr Ile Phe Arg His Asn Asp Val Ser His Leu Arg Glu Leu Leu  
 355 360 365  
 Gln Arg Ser Asp Pro Ser Val Pro Lys Ile Val Ala Phe Glu Thr Val  
 370 375 380  
 His Ser Met Asp Gly Ala Val Cys Pro Leu Glu Glu Leu Cys Asp Val  
 385 390 395 400  
 Ala His Glu Phe Gly Ala Ile Thr Phe Val Asp Glu Val His Ala Val  
 405 410 415  
 Gly Leu Tyr Gly Ala Arg Gly Gly Gly Ile Gly Asp Arg Asp Gly Val  
 420 425 430  
 Met Pro Lys Met Asp Ile Ile Ser Gly Thr Leu Gly Lys Ala Phe Gly  
 435 440 445  
 Cys Val Gly Gly Tyr Ile Ala Ser Thr Ser Ser Leu Ile Asp Thr Val  
 450 455 460



Arg Ser Tyr Ala Ala Gly Phe Ile Phe Thr Thr Ser Leu Pro Pro Met  
465 470 475 480

Leu Leu Ala Gly Ala Leu Glu Ser Val Arg Ile Leu Lys Ser Ala Glu  
485 490 495

Gly Arg Val Leu Arg Arg Gln His Gln Arg Asn Val Lys Leu Met Arg  
500 505 510

Gln Met Leu Met Asp Ala Gly Leu Pro Val Val His Cys Pro Ser His  
515 520 525

Ile Ile Pro Val Arg Val Ala Asp Ala Ala Lys Asn Thr Glu Val Cys  
530 535 540

Asp Glu Leu Met Ser Arg His Asn Ile Tyr Val Gln Ala Ile Asn Tyr  
545 550 555 560

Pro Thr Val Pro Arg Gly Glu Glu Leu Leu Arg Ile Ala Pro Thr Pro  
565 570 575

His His Thr Pro Gln Met Met Asn Tyr Phe Leu Glu Asn Leu Leu Val  
580 585 590

Thr Trp Lys Gln Val Gly Leu Glu Leu Lys Pro His Ser Ser Ala Glu  
595 600 605

Cys Asn Phe Cys Arg Arg Pro Leu His Phe Glu Val Met Ser Glu Arg  
610 615 620

Glu Lys Ser Tyr Phe Ser Gly Leu Ser Lys Leu Val Ser Ala Gln Ala  
625 630 635 640

<210> 123  
<211> 903  
<212> PRT  
<213> Homo sapiens

<400> 123

Met Ala Ser Val Trp Gln Arg Leu Gly Phe Tyr Ala Ser Leu Leu Lys  
1 5 10 15

Arg Gln Leu Asn Gly Gly Pro Asp Val Ile Lys Trp Glu Arg Arg Val  
20 25 30

Ile Pro Gly Cys Thr Arg Ser Ile Tyr Ser Ala Thr Gly Lys Trp Thr  
35 40 45

Lys Glu Tyr Thr Leu Gln Thr Arg Lys Asp Val Glu Lys Trp Trp His  
 50 55 60  
 Gln Arg Ile Lys Glu Gln Ala Ser Lys Ile Ser Glu Ala Asp Lys Ser  
 65 70 75 80  
 Lys Pro Lys Phe Tyr Val Leu Ser Met Phe Pro Tyr Pro Ser Gly Lys  
 85 90 95  
 Leu His Met Gly His Val Arg Val Tyr Thr Ile Ser Asp Thr Ile Ala  
 100 105 110  
 Arg Phe Gln Lys Met Arg Gly Met Gln Val Ile Asn Pro Met Gly Trp  
 115 120 125  
 Asp Ala Phe Gly Leu Pro Ala Glu Asn Ala Ala Val Glu Arg Asn Leu  
 130 135 140  
 His Pro Gln Ser Trp Thr Gln Ser Asn Ile Lys His Met Arg Lys Gln  
 145 150 155 160  
 Leu Asp Arg Leu Gly Leu Cys Phe Ser Trp Asp Arg Glu Ile Thr Thr  
 165 170 175  
 Cys Leu Pro Asp Tyr Tyr Lys Trp Thr Gln Tyr Leu Phe Ile Lys Leu  
 180 185 190  
 Tyr Glu Ala Gly Leu Ala Tyr Gln Lys Glu Ala Leu Val Asn Trp Asp  
 195 200 205  
 Pro Val Asp Gln Thr Val Leu Ala Asn Glu Gln Val Asp Glu His Gly  
 210 215 220  
 Cys Ser Trp Arg Ser Gly Ala Lys Val Glu Gln Lys Tyr Leu Arg Gln  
 225 230 235 240  
 Trp Phe Ile Lys Thr Thr Ala Tyr Ala Lys Ala Met Gln Asp Ala Leu  
 245 250 255  
 Ala Asp Leu Pro Glu Trp Tyr Gly Ile Lys Gly Met Gln Ala His Trp  
 260 265 270  
 Ile Gly Asp Cys Val Gly Cys His Leu Asp Phe Thr Leu Lys Val His  
 275 280 285  
 Gly Gln Ala Thr Gly Glu Lys Leu Thr Ala Tyr Thr Ala Thr Pro Glu  
 290 295 300

Ala Ile Tyr Gly Thr Ser His Val Ala Ile Ser Pro Ser His Arg Leu  
 305 310 315 320  
 Leu His Gly His Ser Ser Leu Lys Glu Ala Leu Arg Met Ala Leu Val  
 325 330 335  
 Pro Gly Lys Asp Cys Leu Thr Pro Val Met Ala Val Asn Met Leu Thr  
 340 345 350  
 Gln Gln Glu Val Pro Val Val Ile Leu Ala Lys Ala Asp Leu Glu Gly  
 355 360 365  
 Ser Leu Asp Ser Lys Ile Gly Ile Pro Ser Thr Ser Ser Glu Asp Thr  
 370 375 380  
 Ile Leu Ala Gln Thr Leu Gly Leu Ala Tyr Ser Glu Val Ile Glu Thr  
 385 390 395 400  
 Leu Pro Asp Gly Thr Glu Arg Leu Ser Ser Ala Glu Phe Thr Gly  
 405 410 415  
 Met Thr Arg Gln Asp Ala Phe Leu Ala Leu Thr Gln Lys Ala Arg Gly  
 420 425 430  
 Lys Arg Val Gly Gly Asp Val Thr Ser Asp Lys Leu Lys Asp Trp Leu  
 435 440 445  
 Ile Ser Arg Gln Arg Tyr Trp Gly Thr Pro Ile Pro Ile Val His Cys  
 450 455 460  
 Pro Val Cys Gly Pro Thr Pro Val Pro Leu Glu Asp Leu Pro Val Thr  
 465 470 475 480  
 Leu Pro Asn Ile Ala Ser Phe Thr Gly Lys Gly Gly Pro Pro Leu Ala  
 485 490 495  
 Met Ala Ser Glu Trp Val Asn Cys Ser Cys Pro Arg Cys Lys Gly Ala  
 500 505 510  
 Ala Lys Arg Glu Thr Asp Thr Met Asp Thr Phe Val Asp Ser Ala Trp  
 515 520 525  
 Tyr Tyr Phe Arg Tyr Thr Asp Pro His Asn Pro His Ser Pro Phe Asn  
 530 535 540  
 Thr Ala Val Ala Asp Tyr Trp Met Pro Val Asp Leu Tyr Ile Gly Gly  
 545 550 555 560

Lys Glu His Ala Val Met His Leu Phe Tyr Ala Arg Phe Phe Ser His  
 565 570 575  
 Phe Cys His Asp Gln Lys Met Val Lys His Arg Glu Pro Phe His Lys  
 580 585 590  
 Leu Leu Ala Gln Gly Leu Ile Lys Gly Gln Thr Phe Arg Leu Pro Ser  
 595 600 605  
 Gly Gln Tyr Leu Gln Arg Glu Glu Val Asp Leu Thr Gly Ser Val Pro  
 610 615 620  
 Val His Ala Lys Thr Lys Glu Lys Leu Glu Val Thr Trp Glu Lys Met  
 625 630 635 640  
 Ser Lys Ser Lys His Asn Gly Val Asp Pro Glu Glu Val Val Glu Gln  
 645 650 655  
 Tyr Gly Ile Asp Thr Ile Arg Leu Tyr Ile Leu Phe Ala Ala Pro Pro  
 660 665 670  
 Glu Lys Asp Ile Leu Trp Asp Val Lys Thr Asp Ala Leu Pro Gly Val  
 675 680 685  
 Leu Arg Trp Gln Gln Arg Leu Trp Thr Leu Thr Thr Arg Phe Ile Glu  
 690 695 700  
 Ala Arg Ala Ser Gly Lys Ser Pro Gln Pro Gln Leu Leu Ser Asn Lys  
 705 710 715 720  
 Glu Lys Ala Glu Ala Arg Lys Leu Trp Glu Tyr Lys Asn Ser Val Ile  
 725 730 735  
 Ser Gln Val Thr Thr His Phe Thr Glu Asp Phe Ser Leu Asn Ser Ala  
 740 745 750  
 Ile Ser Gln Leu Met Gly Leu Ser Asn Ala Leu Ser Gln Ala Ser Gln  
 755 760 765  
 Ser Val Ile Leu His Ser Pro Glu Phe Glu Asp Ala Leu Cys Ala Leu  
 770 775 780  
 Met Val Met Ala Ala Pro Leu Ala Pro His Val Thr Ser Glu Ile Trp  
 785 790 795 800  
 Ala Gly Leu Ala Leu Val Pro Arg Lys Leu Cys Ala His Tyr Thr Trp  
 805 810 815

Asp Ala Ser Val Leu Leu Gln Ala Trp Pro Ala Val Asp Pro Glu Phe  
820 825 830

Leu Gln Gln Pro Glu Val Val Gln Met Ala Val Leu Ile Asn Asn Lys  
835 840 845

Ala Cys Gly Lys Ile Pro Val Pro Gln Gln Val Ala Arg Asp Gln Asp  
850 855 860

Lys Val His Glu Phe Val Leu Gln Ser Glu Leu Gly Val Arg Leu Leu  
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Gln Gly Arg Ser Ile Lys Lys Ser Phe Leu Ser Pro Arg Thr Ala Leu  
885 890 895

Ile Asn Phe Leu Val Gln Asp  
900

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<400> 124

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Thr Gly Leu Leu Gly Lys Val Ala Lys Thr Tyr Gln Phe Leu Phe Ser  
35 40 45

Ile Gly Arg Cys Pro Ile Leu Ala Thr Gln Gly Pro Thr Cys Ser Gln  
50 55 60

Ile His Leu Lys Ala Thr Lys Ala Gly Gly Glu Leu Gln Asp Arg Lys  
65 70 75 80

Ser Lys Ile Val Gln Arg Ala Ala Pro Glu Val Gln Glu Asp Val Lys  
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Thr Phe Lys Thr Asp Leu Leu Ser Thr Met Asp Ser Thr Thr Arg Ser  
100 105 110

His Ser Phe Pro Ser Phe Gln Glu Pro Glu Gln Thr Glu Gly Ala Val  
115 120 125

Pro His Leu Ile Gln Asn Asn Met Thr Gly Ser Gln Ala Phe Gly Tyr  
 130 135 140

Asp Gln Phe Phe Arg Asp Lys Ile Met Glu Lys Lys Gln Asp His Thr  
 145 150 155 160

Tyr Arg Val Phe Lys Thr Val Asn Arg Trp Ala Asn Ala Tyr Pro Phe  
 165 170 175

Ala Gln His Phe Ser Glu Ala Ser Met Ala Ser Lys Asp Val Ser Val  
 180 185 190

Trp Cys Ser Asn Asp Tyr Leu Gly Ile Ser Arg His Pro Arg Val Leu  
 195 200 205

Gln Ala Ile Glu Glu Thr Leu Lys Asn His Gly Ala Gly Ala Gly Gly  
 210 215 220

Thr Arg Asn Ile Ser Gly Thr Ser Lys Phe His Val Glu Leu Glu Gln  
 225 230 235 240

Glu Leu Ala Glu Leu His Gln Lys Asp Ser Ala Leu Leu Phe Ser Ser  
 245 250 255

Cys Phe Val Ala Asn Asp Ser Thr Leu Phe Thr Leu Ala Lys Leu Leu  
 260 265 270

Pro Gly Cys Glu Ile Tyr Ser Asp Ala Gly Asn His Ala Ser Met Ile  
 275 280 285

Gln Gly Ile Arg Asn Ser Gly Ala Ala Lys Phe Val Phe Arg His Asn  
 290 295 300

Asp Pro Gly His Leu Lys Lys Leu Leu Glu Lys Ser Asp Pro Lys Thr  
 305 310 315 320

Pro Lys Ile Val Ala Phe Glu Thr Val His Ser Met Asp Gly Ala Ile  
 325 330 335

Cys Pro Leu Glu Glu Leu Cys Asp Val Ala His Gln Tyr Gly Ala Leu  
 340 345 350

Thr Phe Val Asp Glu Val His Ala Val Gly Leu Tyr Gly Ala Arg Gly  
 355 360 365

Ala Gly Ile Gly Glu Arg Asp Gly Ile Met His Lys Leu Asp Ile Ile  
 370 375 380

Ser Gly Thr Leu Gly Lys Ala Phe Gly Cys Val Gly Gly Tyr Ile Ala  
385 390 395 400

Ser Thr Arg Asp Leu Val Asp Met Val Arg Ser Tyr Ala Ala Gly Phe  
405 410 415

Ile Phe Thr Thr Ser Leu Pro Pro Met Met Leu Ser Gly Ala Leu Glu  
420 425 430

Ser Val Arg Leu Leu Lys Gly Glu Glu Gly Gln Ala Leu Arg Arg Ala  
435 440 445

His Gln Arg Asn Val Lys His Met Arg Gln Leu Leu Met Asp Arg Gly  
450 455 460

Phe Pro Val Ile Pro Cys Pro Ser His Ile Ile Pro Ile Arg Val Gly  
465 470 475 480

Asn Ala Ala Leu Asn Ser Lys Ile Cys Asp Leu Leu Leu Ser Lys His  
485 490 495

Ser Ile Tyr Val Gln Ala Ile Asn Tyr Pro Thr Val Pro Arg Gly Glu  
500 505 510

Glu Leu Leu Arg Leu Ala Pro Ser Pro His His Ser Pro Gln Met Met  
515 520 525

Glu Asn Phe Val Glu Lys Leu Leu Leu Ala Trp Thr Glu Val Gly Leu  
530 535 540

Pro Leu Gln Asp Val Ser Val Ala Ala Cys Asn Phe Cys His Arg Pro  
545 550 555 560

Val His Phe Glu Leu Met Ser Glu Trp Glu Arg Ser Tyr Phe Gly Asn  
565 570 575

Met Gly Pro Gln Tyr Val Thr Thr Tyr Ala  
580 585

<210> 125  
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<213> Neurospora crassa

<400> 125

Met Pro Leu Ile Cys Ala Arg Pro Leu Gly Arg Leu Val Pro Lys Leu  
1 5 10 15

Gly Ala Ser Leu Arg Pro Val Leu Ser Ser His Ala Ala Ser Pro Arg  
Page 235

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Arg	Pro	Val	Gly	Val	Ala	Leu	Glu	Gln	His	Leu	Gly	Thr	Glu	Ser	Trp
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Lys	Arg	Phe	Tyr	Ala	Asp	His	Lys	Leu	Asp	Leu	Leu	Ala	Leu	Asp	Gln
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Lys	Trp	Arg	Gln	Lys	Trp	Ala	Glu	Ser	Ser	Arg	Glu	Lys	Gly	Asn	Lys
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Glu	Asp	Glu	Lys	Asn	Lys	Tyr	Val	Leu	Pro	Met	Phe	Pro	Tyr	Pro	Ser
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Gly	His	Leu	His	Leu	Gly	His	Leu	Arg	Val	Tyr	Thr	Ile	Ala	Asp	Val
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Ile	Ala	Arg	Phe	Gln	Thr	Leu	Gln	Gly	His	Lys	Val	Leu	Leu	Pro	Met
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Gly	Trp	Asp	Ala	Phe	Gly	Leu	Pro	Ala	Glu	Asn	Ala	Ala	Ile	Glu	Arg
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Gly	Ile	Asn	Pro	Ala	Thr	Trp	Thr	Lys	Ala	Asn	Ile	Ala	Lys	Met	Lys
145						150					155				160
Glu	Gln	Leu	Gly	His	Met	Asn	Gly	Ser	Trp	Asp	Trp	Asn	Cys	Glu	Leu
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Ala	Thr	Cys	Asp	Pro	Asp	Phe	Tyr	Lys	His	Thr	Gln	Lys	Ile	Phe	Leu
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Ala	Leu	His	Glu	Lys	Gly	Leu	Ala	Tyr	Gln	Ala	Glu	Ala	Glu	Val	Asn
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Tyr	Asp	Pro	Val	Asp	Lys	Thr	Val	Leu	Ala	Asn	Glu	Gln	Val	Asp	Ala
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Asn	Gly	Cys	Ser	Trp	Arg	Ser	Gly	Ala	Arg	Val	Glu	Lys	Arg	Lys	Leu
225					230					235					240
Lys	Gln	Trp	Phe	Leu	Lys	Ile	Ser	Glu	Phe	Arg	Glu	Ser	Leu	Leu	Lys
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Ala	Met	Gln	Lys	Asn	Trp	Leu	Gly	Lys	Ser	Lys	Gly	Ala	Thr	Val	Lys



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Phe	Pro	Val	Leu	Ala	Phe	Gly	Gln	Gly	Thr	Pro	Ser	Ala	Ile	Glu	Val
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Phe	Thr	Ser	Arg	Pro	Asp	Thr	Leu	Phe	Gly	Val	Gln	Tyr	Ile	Ala	Leu
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Leu	Gln	Ala	Phe	Leu	Ser	Thr	Leu	Pro	Gly	Leu	Ser	Pro	Asp	Ser	Lys
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Val	Gly	Tyr	Leu	Leu	Pro	His	Ile	Arg	Ala	Val	Asn	Pro	Leu	Ala	Tyr
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His	Glu	Glu	Thr	Pro	Glu	Asp	Thr	Lys	Val	Ser	Leu	Pro	Ile	Tyr	Val
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Ala	Pro	Tyr	Val	Leu	Gly	Asp	Tyr	Gly	Glu	Gly	Ala	Val	Met	Gly	Val
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Pro	Gly	His	Asp	Leu	Arg	Asp	His	Ala	Phe	Trp	Lys	Glu	His	His	Tyr
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Asp	Ala	Pro	Val	Arg	Phe	Val	Leu	Ala	Ala	Ser	Glu	Asp	Glu	Ser	Thr
			420					425					430		
Thr	Ala	Met	Pro	Asn	Glu	Pro	Phe	Thr	Glu	His	Gly	Val	Met	Asn	Ala
		435					440					445			
Asn	Ser	Gly	Ile	Phe	Lys	Gly	Lys	Ser	Ser	Lys	Glu	Ala	Gly	Glu	Met
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Leu	Val	Lys	Leu	Leu	Glu	Pro	Ala	Gly	Leu	Ala	Lys	Glu	Thr	Glu	Lys
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Trp	Arg	Leu	Arg	Asp	Trp	Leu	Ile	Ser	Arg	Gln	Arg	Tyr	Trp	Gly	Thr
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Pro	Ile	Pro	Ile	Val	His	Cys	Gly	Ser	Cys	Gly	Thr	Val	Pro	Val	Pro
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Asp	Glu	Gln	Leu	Pro	Val	Glu	Leu	Pro	Glu	Val	Asp	Glu	His	Trp	Ala
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Gly	Lys	Lys	Thr	Gly	Asn	Pro	Leu	Glu	Ser	Gln	Thr	Asp	Trp	Ile	Asn

530

535

540

Thr Ser Cys Pro Lys Cys Gly Gly Glu Ala Lys Arg Asp Thr Asp Thr  
545 550 555 560

Met Asp Thr Phe Val Asp Ser Ser Trp Tyr Tyr Met Arg Phe Ile Asp  
565 570 575

Ala His Asn Lys Glu Ala Pro Phe Ser Pro Glu Lys Ala Lys Val Leu  
580 585 590

Thr Pro Val Asp Leu Tyr Ile Gly Gly Val Glu His Ala Ile Leu His  
595 600 605

Leu Leu Tyr Ser Arg Phe Ile Tyr Lys Phe Leu Met Thr Ser Ser Phe  
610 615 620

Ala Gly Lys Glu Ala Glu Ser Ala Glu Ala Ala Glu Ser Ala Ser Ser  
625 630 635 640

Glu Val Tyr Glu Pro Phe Lys Arg Leu Ile Thr Gln Gly Met Val His  
645 650 655

Gly Lys Thr Tyr Thr Asp Pro Ala Thr Gly Arg Phe Leu Lys Pro Asp  
660 665 670

Glu Val Asp Leu Ser Asp Pro His Gln Pro Lys Val Val Ala Thr Gly  
675 680 685

Ala Leu Ala Asn Val Ser Tyr Glu Lys Met Ser Lys Ser Lys His Asn  
690 695 700

Gly Val Asp Pro Thr Thr Phe Ile Ala Gln Tyr Gly Ala Asp Ala Thr  
705 710 715 720

Arg Ala His Ile Leu Phe Gln Ala Pro Val Ser Glu Ile Leu Asp Trp  
725 730 735

Asp Glu Ser Lys Ile Thr Gly Val Thr Arg Trp Leu Ser Arg Val His  
740 745 750

Asp Leu Val Gln Lys Ile Ala Cys Ser Ser Thr Ser Glu Thr Pro Ser  
755 760 765

Ser Ala Ser Thr Val Lys Ala Phe Phe Glu Gln Gln Gln Gln Pro  
770 775 780

Glu Ser Val Ala Asp Pro Ala Lys Leu Asp Ala Ser Ile Thr Ile Trp  
Page 238



Lys Tyr Ala Ala Ala Asn Pro Ser Cys Phe Ile Leu Gln Arg Arg Gly  
                   20                                  25                                  30  
 Leu Arg Arg Glu Phe Gly Pro Lys Tyr Thr Ala Lys Ile Asn Glu Ala  
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 Glu Glu Asn Trp Gln Ala Arg Ala Glu Ala Ile Lys Lys Gly Lys Lys  
           50                                  55                                  60  
 Gln Asn Thr Trp Asp Leu Phe Glu Glu Arg Gly Tyr Val Lys Asp Thr  
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 Ala Gly Thr Lys Glu His Ile Ala Glu Leu Met Arg Thr Arg Arg Ile  
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 Gly Ala Tyr Val Gly Ile Asp Pro Thr Ala Pro Ser Leu His Val Gly  
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 His Leu Leu Pro Leu Met Pro Leu Phe Trp Met Tyr Leu Glu Gly Tyr  
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 Lys Ala Phe Thr Leu Ile Gly Gly Ser Thr Ala Lys Ile Gly Asp Pro  
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 Thr Gly Arg Leu Lys Ser Arg Asp His Leu Ser Ser Ser Asp Ala Thr  
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 Met Asn Met Thr Lys Ile His Tyr Gln Leu Lys Lys Leu Trp Glu Asn  
                   165                                  170                                  175  
 Val Asp Thr Gln Met Arg Ala Arg Gly Tyr Glu Ala Asp Trp Ala Arg  
                   180                                  185                                  190  
 Lys Arg Gly Ile Val Asn Asn Asn His Trp Trp Asn Lys Gln Pro Met  
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 Leu Glu Val Leu Arg Arg Val Gly His Ala Leu Arg Ile Gly Pro Met  
           210                                  215                                  220  
 Leu Ser Arg Asp Thr Val Lys Asn Lys Met Thr Gln Gly Asp Gly Val  
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 Ser Phe Ala Glu Phe Thr Tyr Pro Ile Met Gln Gly Trp Asp Trp Phe  
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 Glu Leu Phe Tyr Gln Gln Gly Val Gln Met Gln Ile Gly Gly Ser Asp  
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Gln Tyr Gly Asn Ile Ile Ser Gly Leu Glu Val Val Lys Ala Ala Arg  
 275 280 285  
 Glu Ser Glu Pro Asp Pro Gln Glu Arg Lys Tyr Val Thr Pro Lys Thr  
 290 295 300  
 Ala Leu Asp Glu Cys Val Gly Phe Thr Val Pro Leu Leu Thr Asp Ser  
 305 310 315 320  
 Ser Gly Ala Lys Phe Gly Lys Ser Ala Gly Asn Ala Ile Trp Leu Asp  
 325 330 335  
 Pro Tyr Gln Thr Ser Val Phe Asp Phe Tyr Gly Tyr Phe Val Arg Arg  
 340 345 350  
 Ser Asp Gln Glu Val Glu Asn Leu Leu Lys Leu Phe Thr Phe Met Pro  
 355 360 365  
 Ile Ser Glu Ile Thr Lys Thr Met Glu Glu His Ile Lys Asp Pro Ser  
 370 375 380  
 Lys Arg Val Ala Gln His Thr Leu Ala Arg Glu Val Val Thr Leu Val  
 385 390 395 400  
 His Gly Lys Gln Glu Ala Ser Ala Ala Glu Asp Gln His Arg Met Met  
 405 410 415  
 Tyr Thr Gly Gln Met Thr Ile Pro Gln Val Ser Arg Ala Lys Asp Ala  
 420 425 430  
 Ala Thr Gly Gly Asp Gln Tyr Lys Thr Ile Ser Asp Gln Pro Val Thr  
 435 440 445  
 Leu Asn Asn Ala Pro Arg Ile Asp Met Ile Leu Pro Glu Ser Leu Ile  
 450 455 460  
 Met Gly Lys Ser Ile Gly Arg Ile Leu Ser Pro Pro Val Leu Pro Ala  
 465 470 475 480  
 Ala Pro Pro Arg Ala Thr Ser Ser Arg Leu Pro Arg Ala Ala Thr Ser  
 485 490 495  
 Ala Asp Ala Gln Ser Arg Arg Arg Glu Arg His His Glu Pro Gly Pro  
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 His Leu Phe Tyr Ala Arg Gln Ala Val Val Pro Arg Arg Asp Pro Ala  
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Leu Pro Asp  
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<212> PRT  
<213> Caenorhabditis elegans

<400> 127

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Ser Thr His Pro Thr Ile Tyr Phe Thr Gly Phe Gln Pro Thr Gly Thr  
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Pro His Leu Gly Asn Phe Phe Gly Ser Ile Glu Pro Trp Thr Glu Leu  
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Gln Asn Ser Val Asp Lys Asn Ile Leu Met Met Leu Ser Val Val Asp  
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Gln His Ala Ile Ser Leu Gly Pro Leu Pro Ala Asn Glu Leu Arg Gln  
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Asn Thr His Gly Met Thr Ala Ser Leu Ile Ala Cys Gly Val Asp Pro  
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Asn Arg Thr Leu Leu Phe Arg Gln Ser Asp Val Pro Gln Ile Ala Gln  
100 105 110

Phe Ser Trp Phe Leu Gly Ser Leu Gln Thr Thr Ser Lys Leu Ala Arg  
115 120 125

Leu Pro Gln Tyr Lys Glu Lys Lys Glu Arg Phe Lys Lys Gly Asp Ile  
130 135 140

Pro Val Gly Leu Leu Thr Tyr Pro Leu Leu Gln Ala Ala Asp Val Leu  
145 150 155 160

Thr Phe Lys Ala Thr Thr Val Pro Val Gly Glu Asp Gln Ser Gln His  
165 170 175

Leu Asn Leu Leu Gly Gly Leu Ala Tyr Ala Phe Asn Lys Thr Tyr Glu  
180 185 190

Thr Glu Ile Phe Pro Ile Pro Lys Gln Leu Thr Arg Glu Ser His Ala  
195 200 205

Arg Ile Arg Ser Leu Arg Gly Pro Glu Lys Lys Met Ser Lys Ser Ser  
 210 215 220  
 Gly Gly Pro Arg Ser Arg Ile Glu Ile Thr Asp Ser Arg Ser Thr Ile  
 225 230 235 240  
 Ile Glu Lys Cys Gln Leu Ala Gln Ser Asp Asn Ala Gly Lys Val Thr  
 245 250 255  
 Tyr Asp Lys Glu Asn Arg Leu Ala Val Ser Asn Leu Leu Asp Leu Tyr  
 260 265 270  
 Ser Ala Val Thr Lys Thr Gln Thr Ser Glu Ile Asp Phe Ser Asn Trp  
 275 280 285  
 Thr Thr Leu Asp Leu Lys Met Asn Leu Ala Glu Ala Val Asp Lys Arg  
 290 295 300  
 Leu Ala Pro Ile Arg Gln Lys Phe Glu Glu Leu Gln Asn Thr Gly Glu  
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 Val Asp Lys Val Leu Thr Glu Asn Gly Glu Lys Ala Arg Glu Ile Ala  
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 Glu Lys Asn Leu Glu Glu Ile Arg Arg Thr Ile Gly Phe Leu  
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 <213> Mus musculus

<400> 128

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 Asp Ala Ser Trp Tyr Ser Pro Gly Thr Arg Gln Ala Arg Lys Glu Tyr  
 35 40 45  
 Gln Glu Arg His Val Pro Gly Ala Ser Phe Phe Asp Ile Glu Glu Cys  
 50 55 60  
 Arg Asp Thr Thr Ser Pro Tyr Glu Met Met Leu Pro Ser Glu Ala His  
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Phe Gly Asp Tyr Val Gly Asn Leu Gly Ile Ser Asn Asp Thr His Val  
85 90 95

Val Val Tyr Asp Gly Asp Asp Leu Gly Ser Phe Tyr Ala Pro Arg Val  
100 105 110

Trp Trp Met Phe Arg Val Phe Gly His Arg Thr Val Ser Val Leu Asn  
115 120 125

Gly Gly Phe Arg Asn Trp Leu Lys Glu Gly His Pro Val Thr Ser Glu  
130 135 140

Pro Ser Arg Pro Glu Pro Ala Val Phe Lys Ala Thr Leu Asn Leu Ser  
145 150 155 160

Leu Leu Lys Thr Tyr Glu Gln Val Leu Glu Asn Leu Gln Ser Lys Arg  
165 170 175

Phe Gln Leu Val Asp Ser Arg Ala Gln Gly Arg Tyr Leu Gly Thr Gln  
180 185 190

Pro Glu Pro Asp Ile Val Gly Leu Asp Ser Gly His Ile Arg Gly Ser  
195 200 205

Val Asn Met Pro Phe Met Asp Phe Leu Thr Lys Asp Gly Phe Glu Lys  
210 215 220

Ser Pro Glu Glu Leu Arg Ala Ile Phe Gln Asp Lys Lys Val Asp Leu  
225 230 235 240

Ser Gln Pro Leu Ile Ala Thr Cys Arg Lys Gly Val Thr Ala Cys His  
245 250 255

Val Ala Leu Ala Ala Tyr Leu Cys Gly Lys Pro Asp Val Ala Val Tyr  
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Asp Gly Ser Trp Ser Glu Trp Phe Arg Arg Ala Pro Pro Glu Thr Arg  
275 280 285

Val Ser Gln Gly Lys Ser Gly Lys Ala  
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<210> 129  
<211> 713  
<212> PRT  
<213> Homo sapiens

<400> 129

Met Leu Cys Val Gly Arg Leu Gly Gly Leu Gly Ala Arg Ala Ala Ala  
Page 244



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Leu	Pro	Pro	Arg 20
Arg	Ala	Gly	Arg
Gly 25	Ser	Leu	Glu
Ala	Gly 30	Ile	Arg
Ala	Arg	Arg	Val
Ser	Thr	Ser	Trp 40
Ser	Pro	Val	Gly
Ala 45	Ala	Phe	Asn
Val	Lys 50	Pro	Gln
Gly	Ser	Arg	Leu
Asp	Leu	Phe	Gly 60
Glu	Arg	Arg	Arg
Leu	Phe	Gly	Val
Pro	Glu 70	Ser	Ala
Pro	Glu 75	Gly	Phe
His	Ile	Ala	Cys
Gln	Glu	Lys	Ala
Leu	Arg	Lys	Thr
Glu	Leu	Val	Asp
Arg	Ala	Cys	Arg
Ser	Thr	Pro	Pro
Gly	Pro	Gln	Thr
Val 105	Leu	Ile	Phe
Asp	Glu 110	Leu	Ser
Asp	Ser	Leu 115	Cys
Arg	Val	Ala	Asp
Leu	Ala	Asp	Phe
Val 125	Lys	Ile	Ala
His	Pro	Glu	Pro
Ala	Phe	Arg	Glu
Ala	Ala	Glu	Glu
Ala	Cys	Arg	Ser
Ile	Gly	Thr	Met
Val	Glu 150	Lys	Leu
Asn	Thr	Asn	Val
Asp	Leu	Tyr	Gln 160
Ser	Leu	Gln	Lys
Leu	Leu	Ala	Asp
Lys	Lys 170	Leu	Val
Asp	Ser	Leu	Asp
Pro	Glu	Thr	Arg
Arg	Val	Ala	Glu
Leu	Phe	Met	Phe
Asp	Phe	Glu	Ile
Ser	Gly	Ile 195	His
Leu	Asp	Lys	Glu
Lys	Arg	Lys	Arg
Ala 205	Val	Asp	Leu
Asn	Val 210	Lys	Ile
Leu	Asp	Leu	Ser
Ser	Thr	Phe	Leu
Met	Gly	Thr	Asn
Phe	Pro	Asn	Lys
Ile	Glu 230	Lys	His
Leu	Leu	Pro	Glu
His	Ile	Arg	Arg
Asn	Phe	Thr	Ser
Ala 245	Gly	Asp	His
Ile	Ile 250	Ile	Asp
Gly	Leu	His	Ala
Glu	Ser	Pro	Asp
Asp	Leu	Val	Arg
Glu	Ala	Ala	Tyr
Lys	Ile	Phe	Leu

260

265

270

Tyr Pro Asn Ala Gly Gln Leu Lys Cys Leu Glu Glu Leu Leu Ser Ser  
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Arg Asp Leu Leu Ala Lys Leu Val Gly Tyr Ser Thr Phe Ser His Arg  
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Ala Leu Gln Gly Thr Ile Ala Lys Asn Pro Glu Thr Val Met Gln Phe  
305 310 315 320

Leu Glu Lys Leu Ser Asp Lys Leu Ser Glu Arg Thr Leu Lys Asp Phe  
325 330 335

Glu Met Ile Arg Gly Met Lys Met Lys Leu Asn Ala Gln Asn Ser Glu  
340 345 350

Val Met Pro Trp Asp Pro Pro Tyr Tyr Ser Gly Val Ile Arg Ala Glu  
355 360 365

Arg Tyr Asn Ile Glu Pro Ser Leu Tyr Cys Pro Phe Phe Ser Leu Gly  
370 375 380

Ala Cys Met Glu Gly Leu Asn Ile Leu Leu Asn Arg Leu Leu Gly Ile  
385 390 395 400

Ser Leu Tyr Ala Glu Gln Pro Ala Lys Gly Glu Val Trp Ser Glu Asp  
405 410 415

Val Arg Lys Leu Ala Val Val His Glu Ser Glu Gly Leu Leu Gly Tyr  
420 425 430

Ile Tyr Cys Asp Phe Phe Gln Arg Ala Asp Lys Pro His Gln Asp Cys  
435 440 445

His Phe Thr Ile Arg Gly Gly Arg Leu Lys Glu Asp Gly Asp Tyr Gln  
450 455 460

Leu Pro Val Val Val Leu Met Leu Asn Leu Pro Arg Ser Ser Arg Ser  
465 470 475 480

Ser Pro Thr Leu Leu Thr Pro Gly Met Met Glu Asn Leu Phe His Glu  
485 490 495

Met Gly His Ala Met His Ser Met Leu Gly Arg Thr Arg Tyr Gln His  
500 505 510

Val Thr Gly Thr Arg Cys Pro Thr Asp Phe Ala Glu Val Pro Ser Ile  
Page 246

515

520

525

Leu Met Glu Tyr Phe Ala Asn Asp Tyr Arg Val Val Asn Gln Phe Ala  
 530 535 540

Arg His Tyr Gln Thr Gly Gln Pro Leu Pro Lys Asn Met Val Ser Arg  
 545 550 555 560

Leu Cys Glu Ser Lys Lys Val Cys Ala Ala Ala Asp Met Gln Leu Gln  
 565 570 575

Val Phe Tyr Ala Thr Leu Asp Gln Ile Tyr His Gly Lys His Pro Leu  
 580 585 590

Arg Asn Ser Thr Thr Asp Ile Leu Lys Glu Thr Gln Glu Lys Phe Tyr  
 595 600 605

Gly Leu Pro Tyr Val Pro Asn Thr Ala Trp Gln Leu Arg Phe Ser His  
 610 615 620

Leu Val Gly Tyr Gly Ala Arg Tyr Tyr Ser Tyr Leu Met Ser Arg Ala  
 625 630 635 640

Val Ala Ser Met Val Trp Lys Glu Cys Phe Leu Gln Asp Pro Phe Asn  
 645 650 655

Arg Ala Ala Gly Glu Arg Tyr Arg Arg Glu Met Leu Ala His Gly Gly  
 660 665 670

Gly Arg Glu Pro Met Leu Met Val Glu Gly Met Leu Gln Lys Cys Pro  
 675 680 685

Ser Val Asp Asp Phe Val Ser Ala Leu Val Ser Asp Leu Asp Leu Asp  
 690 695 700

Phe Glu Thr Phe Leu Met Asp Ser Glu  
 705 710

<210> 130  
 <211> 501  
 <212> PRT  
 <213> Homo sapiens

<400> 130

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Leu Gly Trp Ser Val Ser Arg Gly Arg Asn Trp Arg Trp Phe His Ser  
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 Thr Gln Trp Leu Arg Gly Asp Pro Ile Lys Ile Leu Met Pro Ser Leu  
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 Ser Pro Thr Met Glu Glu Gly Asn Ile Val Lys Trp Leu Lys Lys Glu  
 65 70 75 80  
 Gly Glu Ala Val Ser Ala Gly Asp Ala Leu Cys Glu Ile Glu Thr Asp  
 85 90 95  
 Lys Ala Val Val Thr Leu Asp Ala Ser Asp Asp Gly Ile Leu Ala Lys  
 100 105 110  
 Ile Val Val Glu Glu Gly Ser Lys Asn Ile Arg Leu Gly Ser Leu Ile  
 115 120 125  
 Gly Leu Ile Val Glu Glu Gly Glu Asp Trp Lys His Val Glu Ile Pro  
 130 135 140  
 Lys Asp Val Gly Pro Pro Pro Pro Val Ser Lys Pro Ser Glu Pro Arg  
 145 150 155 160  
 Pro Ser Pro Glu Pro Gln Ile Ser Ile Pro Val Lys Lys Glu His Ile  
 165 170 175  
 Pro Gly Thr Leu Arg Phe Arg Leu Ser Pro Ala Ala Arg Asn Ile Leu  
 180 185 190  
 Glu Lys His Ser Leu Asp Ala Ser Gln Gly Thr Ala Thr Gly Pro Arg  
 195 200 205  
 Gly Ile Phe Thr Lys Glu Asp Ala Leu Lys Leu Val Gln Leu Lys Gln  
 210 215 220  
 Thr Gly Lys Ile Thr Glu Ser Arg Pro Thr Pro Ala Pro Thr Ala Thr  
 225 230 235 240  
 Pro Thr Ala Pro Ser Pro Leu Gln Ala Thr Ala Gly Pro Ser Tyr Pro  
 245 250 255  
 Arg Pro Val Ile Pro Pro Val Ser Thr Pro Gly Gln Pro Asn Ala Val  
 260 265 270  
 Gly Thr Phe Thr Glu Ile Pro Ala Ser Asn Ile Arg Arg Val Ile Ala  
 275 280 285

Lys Arg Leu Thr Glu Ser Lys Ser Thr Val Pro His Ala Tyr Ala Thr  
290 295 300

Ala Asp Cys Asp Leu Gly Ala Val Leu Lys Val Arg Gln Asp Leu Val  
305 310 315 320

Lys Asp Asp Ile Lys Val Ser Val Asn Asp Phe Ile Ile Lys Ala Ala  
325 330 335

Ala Val Thr Leu Lys Gln Met Pro Asp Val Asn Val Ser Trp Asp Gly  
340 345 350

Glu Gly Pro Lys Gln Leu Pro Phe Ile Asp Ile Ser Val Ala Val Ala  
355 360 365

Thr Asp Lys Gly Leu Leu Thr Pro Ile Ile Lys Asp Ala Ala Ala Lys  
370 375 380

Gly Ile Gln Glu Ile Ala Asp Ser Val Lys Ala Leu Ser Lys Lys Ala  
385 390 395 400

Arg Asp Gly Lys Leu Leu Pro Glu Glu Tyr Gln Gly Gly Ser Phe Ser  
405 410 415

Ile Ser Asn Leu Gly Met Phe Gly Ile Asp Glu Phe Thr Ala Val Ile  
420 425 430

Asn Pro Pro Gln Ala Cys Ile Leu Ala Val Gly Arg Phe Arg Pro Val  
435 440 445

Leu Lys Leu Thr Glu Asp Glu Glu Gly Asn Ala Lys Leu Gln Gln Arg  
450 455 460

Gln Leu Ile Thr Val Thr Met Ser Ser Asp Ser Arg Val Val Asp Asp  
465 470 475 480

Glu Leu Ala Thr Arg Phe Leu Lys Ser Phe Lys Ala Asn Leu Glu Asn  
485 490 495

Pro Ile Arg Leu Ala  
500

<210> 131  
<211> 430  
<212> PRT  
<213> Homo sapiens

<400> 131

Met Ala Leu Leu His Ser Gly Arg Val Leu Pro Gly Ile Ala Ala Ala  
1 5 10 15  
Phe His Pro Gly Leu Ala Ala Ala Ala Ser Ala Arg Ala Ser Ser Trp  
20 25 30  
Trp Thr His Val Glu Met Gly Pro Pro Asp Pro Ile Leu Gly Val Thr  
35 40 45  
Glu Ala Phe Lys Arg Asp Thr Asn Ser Lys Lys Met Asn Leu Gly Val  
50 55 60  
Gly Ala Tyr Arg Asp Asp Asn Gly Lys Pro Tyr Val Leu Pro Ser Val  
65 70 75 80  
Arg Lys Ala Glu Ala Gln Ile Ala Ala Lys Asn Leu Asp Lys Glu Tyr  
85 90 95  
Leu Pro Ile Gly Gly Leu Ala Glu Phe Cys Lys Ala Ser Ala Glu Leu  
100 105 110  
Ala Leu Gly Glu Asn Ser Glu Val Leu Lys Ser Gly Arg Phe Val Thr  
115 120 125  
Val Gln Thr Ile Ser Gly Thr Gly Ala Leu Arg Ile Gly Ala Ser Phe  
130 135 140  
Leu Gln Arg Phe Phe Lys Phe Ser Arg Asp Val Phe Leu Pro Lys Pro  
145 150 155 160  
Thr Trp Gly Asn His Thr Pro Ile Phe Arg Asp Ala Gly Met Gln Leu  
165 170 175  
Gln Gly Tyr Arg Tyr Tyr Asp Pro Lys Thr Cys Gly Phe Asp Phe Thr  
180 185 190  
Gly Ala Val Glu Asp Ile Ser Lys Ile Pro Glu Gln Ser Val Leu Leu  
195 200 205  
Leu His Ala Cys Ala His Asn Pro Thr Gly Val Asp Pro Arg Pro Glu  
210 215 220  
Gln Trp Lys Glu Ile Ala Thr Val Val Lys Lys Arg Asn Leu Phe Ala  
225 230 235 240  
Phe Phe Asp Met Ala Tyr Gln Gly Phe Ala Ser Gly Asp Gly Asp Lys  
245 250 255

Asp Ala Trp Ala Val Arg His Phe Ile Glu Gln Gly Ile Asn Val Cys  
 260 265 270  
 Leu Cys Gln Ser Tyr Ala Lys Asn Met Gly Leu Tyr Gly Glu Arg Val  
 275 280 285  
 Gly Ala Phe Thr Met Val Cys Lys Asp Ala Asp Glu Ala Lys Arg Val  
 290 295 300  
 Glu Ser Gln Leu Lys Ile Leu Ile Arg Pro Met Tyr Ser Asn Pro Pro  
 305 310 315 320  
 Leu Asn Gly Ala Arg Ile Ala Ala Ala Ile Leu Asn Thr Pro Asp Leu  
 325 330 335  
 Arg Lys Gln Trp Leu Gln Glu Val Lys Gly Met Ala Asp Arg Ile Ile  
 340 345 350  
 Gly Met Arg Thr Gln Leu Val Ser Asn Leu Lys Lys Glu Gly Ser Thr  
 355 360 365  
 His Asn Trp Gln His Ile Thr Asp Gln Ile Gly Met Phe Cys Phe Thr  
 370 375 380  
 Gly Leu Lys Pro Glu Gln Val Glu Arg Leu Ile Lys Glu Phe Ser Ile  
 385 390 395 400  
 Tyr Met Thr Lys Asp Gly Arg Ile Ser Val Ala Gly Val Thr Ser Ser  
 405 410 415  
 Asn Val Gly Tyr Leu Ala His Ala Ile His Gln Val Thr Lys  
 420 425 430

<210> 132  
 <211> 439  
 <212> PRT  
 <213> Homo sapiens

<400> 132

Met Phe Ser Lys Leu Ala His Leu Gln Arg Phe Ala Val Leu Ser Arg  
 1 5 10 15  
 Gly Val His Ser Ser Val Ala Ser Ala Thr Ser Val Ala Thr Lys Lys  
 20 25 30  
 Thr Val Gln Gly Pro Pro Thr Ser Asp Asp Ile Phe Glu Arg Glu Tyr  
 35 40 45

Lys Tyr Gly Ala His Asn Tyr His Pro Leu Pro Val Ala Leu Glu Arg  
 50 55 60

Gly Lys Gly Ile Tyr Leu Trp Asp Val Glu Gly Arg Lys Tyr Phe Asp  
 65 70 75 80

Phe Leu Ser Ser Tyr Ser Ala Val Asn Gln Gly His Cys His Pro Lys  
 85 90 95

Ile Val Asn Ala Leu Lys Ser Gln Val Asp Lys Leu Thr Leu Thr Ser  
 100 105 110

Arg Ala Phe Tyr Asn Asn Val Leu Gly Glu Tyr Glu Glu Tyr Ile Thr  
 115 120 125

Lys Leu Phe Asn Tyr His Lys Val Leu Pro Met Asn Thr Gly Val Glu  
 130 135 140

Ala Gly Glu Thr Ala Cys Lys Leu Ala Arg Lys Trp Gly Tyr Thr Val  
 145 150 155 160

Lys Gly Ile Gln Lys Tyr Lys Ala Lys Ile Val Phe Ala Ala Gly Asn  
 165 170 175

Phe Trp Gly Arg Thr Leu Ser Ala Ile Ser Ser Ser Thr Asp Pro Thr  
 180 185 190

Ser Tyr Asp Gly Phe Gly Pro Phe Met Pro Gly Phe Asp Ile Ile Pro  
 195 200 205

Tyr Asn Asp Leu Pro Ala Leu Glu Arg Ala Leu Gln Asp Pro Asn Val  
 210 215 220

Ala Ala Phe Met Val Glu Pro Ile Gln Gly Glu Ala Gly Val Val Val  
 225 230 235 240

Pro Asp Pro Gly Tyr Leu Met Gly Val Arg Glu Leu Cys Thr Arg His  
 245 250 255

Gln Val Leu Phe Ile Ala Asp Glu Ile Gln Thr Gly Leu Ala Arg Thr  
 260 265 270

Gly Arg Trp Leu Ala Val Asp Tyr Glu Asn Val Arg Pro Asp Ile Val  
 275 280 285

Leu Leu Gly Lys Ala Leu Ser Gly Gly Leu Tyr Pro Val Ser Ala Val  
 290 295 300



Leu Cys Asp Asp Asp Ile Met Leu Thr Ile Lys Pro Gly Glu His Gly  
305 310 315 320

Ser Thr Tyr Gly Gly Asn Pro Leu Gly Cys Arg Val Ala Ile Ala Ala  
325 330 335

Leu Glu Val Leu Glu Glu Glu Asn Leu Ala Glu Asn Ala Asp Lys Leu  
340 345 350

Gly Ile Ile Leu Arg Asn Glu Leu Met Lys Leu Pro Ser Asp Val Val  
355 360 365

Thr Ala Val Arg Gly Lys Gly Leu Leu Asn Ala Ile Val Ile Lys Glu  
370 375 380

Thr Lys Asp Trp Asp Ala Trp Lys Val Cys Leu Arg Leu Arg Asp Asn  
385 390 395 400

Gly Leu Leu Ala Lys Pro Thr His Gly Asp Ile Ile Arg Phe Ala Pro  
405 410 415

Pro Leu Val Ile Lys Glu Asp Glu Leu Arg Glu Ser Ile Glu Ile Ile  
420 425 430

Asn Lys Thr Ile Leu Ser Phe  
435

<210> 133  
<211> 392  
<212> PRT  
<213> Homo sapiens

<400> 133

Met Ala Ser His Lys Leu Leu Val Thr Pro Pro Lys Ala Leu Leu Lys  
1 5 10 15

Pro Leu Ser Ile Pro Asn Gln Leu Leu Leu Gly Pro Gly Pro Ser Asn  
20 25 30

Leu Pro Pro Arg Ile Met Ala Ala Gly Gly Leu Gln Met Ile Gly Ser  
35 40 45

Met Ser Lys Asp Met Tyr Gln Ile Met Asp Glu Ile Lys Glu Gly Ile  
50 55 60

Gln Tyr Val Phe Gln Thr Arg Asn Pro Leu Thr Leu Val Ile Ser Gly  
65 70 75 80

Ser Gly His Cys Ala Leu Glu Ala Ala Leu Val Asn Val Leu Glu Pro  
Page 253

													I		
				85				90					95		
Gly	Asp	Ser	Phe 100	Leu	Val	Gly	Ala	Asn 105	Gly	Ile	Trp	Gly	Gln 110	Arg	Ala
Val	Asp	Ile 115	Gly	Glu	Arg	Ile	Gly 120	Ala	Arg	Val	His	Pro 125	Met	Thr	Lys
Asp	Pro 130	Gly	Gly	His	Tyr	Thr 135	Leu	Gln	Glu	Val	Glu 140	Glu	Gly	Leu	Ala
Gln 145	His	Lys	Pro	Val	Leu 150	Leu	Phe	Leu	Thr	His 155	Gly	Glu	Ser	Ser	Thr 160
Gly	Val	Leu	Gln	Pro 165	Leu	Asp	Gly	Phe	Gly 170	Glu	Leu	Cys	His	Arg 175	Tyr
Lys	Cys	Leu	Leu 180	Leu	Val	Asp	Ser	Val 185	Ala	Ser	Leu	Gly	Gly 190	Thr	Pro
Leu	Tyr	Met 195	Asp	Arg	Gln	Gly	Ile 200	Asp	Ile	Leu	Tyr	Ser 205	Gly	Ser	Gln
Lys	Ala 210	Leu	Asn	Ala	Pro	Pro 215	Gly	Thr	Ser	Leu	Ile 220	Ser	Phe	Ser	Asp
Lys 225	Ala	Lys	Lys	Lys	Met 230	Tyr	Ser	Arg	Lys	Thr 235	Lys	Pro	Phe	Ser	Phe 240
Tyr	Leu	Asp	Ile	Lys 245	Trp	Leu	Ala	Asn	Phe 250	Trp	Gly	Cys	Asp	Asp 255	Gln
Pro	Arg	Met	Tyr 260	His	His	Thr	Ile	Pro 265	Val	Ile	Ser	Leu	Tyr 270	Ser	Leu
Arg	Glu	Ser 275	Leu	Ala	Leu	Ile	Ala 280	Glu	Gln	Gly	Leu	Glu 285	Asn	Ser	Trp
Arg	Gln 290	His	Arg	Glu	Ala	Ala 295	Ala	Tyr	Leu	His	Gly 300	Arg	Leu	Gln	Ala
Leu 305	Gly	Leu	Gln	Leu	Phe 310	Val	Lys	Asp	Pro	Ala 315	Leu	Arg	Leu	Pro	Thr 320
Val	Thr	Thr	Val	Ala 325	Val	Pro	Ala	Gly	Tyr 330	Asp	Trp	Arg	Asp	Ile 335	Val
Ser	Tyr	Val	Ile	Asp	His	Phe	Asp	Ile	Glu	Ile	Met	Gly	Gly	Leu	Gly



Phe Trp Gly Arg Thr Leu Ser Ala Ile Ser Ser Ser Thr Asp Pro Thr  
180 185 190  
Ser Tyr Asp Gly Phe Gly Pro Phe Met Pro Gly Phe Glu Thr Ile Pro  
195 200 205  
Tyr Asn Asp Leu Pro Ala Leu Glu Arg Ala Leu Gln Asp Pro Asn Val  
210 215 220  
Ala Ala Phe Met Val Glu Pro Ile Gln Gly Glu Ala Gly Val Ile Val  
225 230 235 240  
Pro Asp Pro Gly Tyr Leu Thr Gly Val Arg Glu Leu Cys Thr Arg His  
245 250 255  
Gln Val Leu Phe Ile Ala Asp Glu Ile Gln Thr Gly Leu Ala Arg Thr  
260 265 270  
Gly Arg Trp Leu Ala Val Asp His Glu Asn Val Arg Pro Asp Met Val  
275 280 285  
Leu Leu Gly Lys Ala Leu Ser Gly Gly Leu Tyr Pro Val Ser Ala Val  
290 295 300  
Leu Cys Asp Asp Glu Ile Met Leu Thr Ile Lys Pro Gly Glu His Gly  
305 310 315 320  
Ser Thr Tyr Gly Gly Asn Pro Leu Gly Cys Arg Ile Ala Ile Ala Ala  
325 330 335  
Leu Glu Val Leu Glu Glu Glu Asn Leu Ala Glu Asn Ala Asp Lys Met  
340 345 350  
Gly Ala Ile Leu Arg Lys Glu Leu Met Lys Leu Pro Ser Asp Val Val  
355 360 365  
Thr Ser Val Arg Gly Lys Gly Leu Leu Asn Ala Ile Val Ile Arg Glu  
370 375 380  
Thr Lys Asp Cys Asp Ala Trp Lys Val Cys Leu Arg Leu Arg Asp Asn  
385 390 395 400  
Gly Leu Leu Ala Lys Pro Thr His Gly Asp Ile Ile Arg Leu Ala Pro  
405 410 415  
Pro Leu Val Ile Lys Glu Asp Glu Ile Arg Glu Ser Val Glu Ile Ile  
420 425 430

Asn Lys Thr Ile Leu Ser Phe  
435

<210> 135  
<211> 615  
<212> PRT  
<213> Homo sapiens  
<400> 135

Arg Val Thr Ser Arg Ser Gly Pro Ala Pro Ala Arg Arg Asn Ser Val  
1 5 10 15

Thr Thr Gly Tyr Gly Gly Val Arg Ala Leu Cys Gly Trp Thr Pro Ser  
20 25 30

Ser Gly Ala Thr Pro Arg Asn Arg Leu Leu Leu Gln Leu Leu Gly Ser  
35 40 45

Pro Gly Arg Arg Tyr Tyr Ser Leu Pro Pro His Gln Lys Val Pro Leu  
50 55 60

Pro Ser Leu Ser Pro Thr Met Gln Ala Gly Thr Ile Ala Arg Trp Lys  
65 70 75 80

Lys Lys Glu Gly Asp Lys Ile Asn Glu Gly Asp Leu Ile Ala Glu Val  
85 90 95

Glu Thr Asp Lys Ala Thr Val Gly Phe Glu Ser Leu Glu Glu Cys Tyr  
100 105 110

Met Ala Lys Ile Leu Val Ala Glu Gly Thr Arg Asp Val Pro Ile Gly  
115 120 125

Ala Ile Ile Cys Ile Thr Val Gly Lys Pro Glu Asp Ile Glu Ala Phe  
130 135 140

Lys Asn Tyr Thr Leu Asp Ser Ser Ala Ala Pro Thr Pro Gln Ala Ala  
145 150 155 160

Pro Ala Pro Thr Pro Ala Ala Thr Ala Ser Pro Pro Thr Pro Ser Ala  
165 170 175

Gln Ala Pro Gly Ser Ser Tyr Pro Pro His Met Gln Val Leu Leu Pro  
180 185 190

Ala Leu Ser Pro Thr Met Thr Met Gly Thr Val Gln Arg Trp Glu Lys  
195 200 205

Lys Val Gly Glu Lys Leu Ser Glu Gly Asp Leu Leu Ala Glu Ile Glu  
 210 215 220  
 Thr Asp Lys Ala Thr Ile Gly Phe Glu Val Gln Glu Glu Gly Tyr Leu  
 225 230 235 240  
 Ala Lys Ile Leu Val Pro Glu Gly Thr Arg Asp Val Pro Leu Gly Thr  
 245 250 255  
 Pro Leu Cys Ile Ile Val Glu Lys Glu Ala Asp Ile Ser Ala Phe Ala  
 260 265 270  
 Asp Tyr Arg Pro Thr Glu Val Thr Asp Leu Lys Pro Gln Val Pro Pro  
 275 280 285  
 Pro Thr Pro Pro Pro Val Ala Ala Val Pro Pro Thr Pro Gln Pro Leu  
 290 295 300  
 Ala Pro Thr Pro Ser Ala Pro Cys Pro Ala Thr Pro Ala Gly Pro Lys  
 305 310 315 320  
 Gly Arg Val Phe Val Ser Pro Leu Ala Lys Lys Leu Ala Val Glu Lys  
 325 330 335  
 Gly Ile Asp Leu Thr Gln Val Lys Gly Thr Gly Pro Asp Gly Arg Ile  
 340 345 350  
 Thr Lys Lys Asp Ile Asp Ser Phe Val Pro Ser Lys Val Ala Pro Ala  
 355 360 365  
 Pro Ala Ala Val Val Pro Pro Thr Gly Pro Gly Met Ala Pro Val Pro  
 370 375 380  
 Thr Gly Val Phe Thr Asp Ile Pro Ile Ser Asn Ile Arg Arg Val Ile  
 385 390 395 400  
 Ala Gln Arg Leu Met Gln Ser Lys Gln Thr Ile Pro His Tyr Tyr Leu  
 405 410 415  
 Ser Ile Asp Val Asn Met Gly Glu Val Leu Leu Val Arg Lys Glu Leu  
 420 425 430  
 Asn Lys Ile Leu Glu Gly Arg Ser Lys Ile Ser Val Asn Asp Phe Ile  
 435 440 445  
 Ile Lys Ala Ser Ala Leu Ala Cys Leu Lys Val Pro Glu Ala Asn Ser  
 450 455 460

Ser Trp Met Asp Thr Val Ile Arg Gln Asn His Val Val Asp Val Ser  
465 470 475 480

Val Ala Val Ser Thr Pro Ala Gly Leu Ile Thr Pro Ile Val Phe Asn  
485 490 495

Ala His Ile Lys Gly Val Glu Thr Ile Ala Asn Asp Val Val Ser Leu  
500 505 510

Ala Thr Lys Ala Arg Glu Gly Lys Leu Gln Pro His Glu Phe Gln Gly  
515 520 525

Gly Thr Phe Thr Ile Ser Asn Leu Gly Met Phe Gly Ile Lys Asn Phe  
530 535 540

Ser Ala Ile Ile Asn Pro Pro Gln Ala Cys Ile Leu Ala Ile Gly Ala  
545 550 555 560

Ser Glu Asp Lys Leu Val Pro Ala Asp Asn Glu Lys Gly Phe Asp Val  
565 570 575

Ala Ser Met Met Ser Val Thr Leu Ser Cys Asp His Arg Val Val Asp  
580 585 590

Gly Ala Val Gly Ala Gln Trp Leu Ala Glu Phe Arg Lys Tyr Leu Glu  
595 600 605

Lys Pro Ile Thr Met Leu Leu  
610 615

<210> 136  
<211> 177  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 136

Met Lys His Thr Thr Ser Thr Met Leu Arg Thr Thr Arg Leu Trp Thr  
1 5 10 15

Thr Arg Met Pro Ala Val Ser Lys Leu Phe Leu Arg Asn Ser Ser Gly  
20 25 30

Asn Ala Leu Asn Lys Asn Lys Leu Pro Phe Leu Tyr Ser Ser Gln Gly  
35 40 45

Pro Gln Ala Val Arg Tyr Thr Ser Gln His Glu Trp Ile Ala Val His  
50 55 60

Gln Asp Lys Thr Ala Phe Val Gly Ile Thr Lys Tyr Ala Thr Asp Ser  
65 70 75 80

Leu Gly Asp Ala Thr Tyr Val Glu Leu Pro Glu Val Gly Thr Glu Ile  
85 90 95

Ser Gln Gly Glu Ser Leu Gly Ser Ile Glu Ser Val Lys Ser Ala Ser  
100 105 110

Glu Ile Tyr Gln Pro Ala Asp Gly Thr Val Glu Glu Ile Asn Thr Asn  
115 120 125

Leu Glu Glu Asn Pro Gly Val Val Asn Glu Asp Pro Met Gly Asp Gly  
130 135 140

Trp Leu Val Lys Met Lys Leu Gly Glu Gly Val Asn Val Glu Gln Val  
145 150 155 160

Glu Gly Leu Met Ser Leu Glu Gln Tyr Glu Lys Thr Leu Val His Asp  
165 170 175

Asp

<210> 137  
<211> 1133  
<212> PRT  
<213> *Saccharomyces cerevisiae*  
<400> 137

Met Leu Arg Thr Arg Thr Thr Lys Thr Leu Ser Thr Val Ala Arg Thr  
1 5 10 15

Thr Arg Ala Ile Gln Tyr Tyr Arg Ser Ile Ala Lys Thr Ala Ala Val  
20 25 30

Ser Gln Arg Arg Phe Ala Ser Thr Leu Thr Val Arg Asp Val Glu Asn  
35 40 45

Ile Lys Pro Ser His Ile Ile Lys Ser Pro Thr Trp Gln Glu Phe Gln  
50 55 60

His Gln Leu Lys Asp Pro Arg Tyr Met Glu His Phe Ala Gln Leu Asp  
65 70 75 80

Ala Gln Phe Ala Arg His Phe Met Ala Thr Asn Ser Gly Lys Ser Ile  
85 90 95

Leu Ala Lys Asp Asp Ser Thr Ser Gln Lys Lys Asp Glu Asp Val Lys



100					105					110					
Ile	Val	Pro	Asp	Glu	Lys	Asp	Thr	Asp	Asn	Asp	Val	Glu	Pro	Thr	Arg
		115					120					125			
Asp	Asp	Glu	Ile	Val	Asn	Lys	Asp	Gln	Glu	Gly	Glu	Ala	Ser	Lys	Asn
	130					135					140				
Ser	Arg	Ser	Ser	Ala	Ser	Gly	Gly	Gly	Gln	Ser	Ser	Ser	Ser	Arg	Ser
145					150					155					160
Asp	Ser	Gly	Asp	Gly	Ser	Ser	Lys	Gln	Lys	Pro	Pro	Lys	Asp	Val	Pro
				165					170					175	
Glu	Val	Tyr	Pro	Gln	Met	Leu	Ala	Leu	Pro	Ile	Ala	Arg	Arg	Pro	Leu
			180					185					190		
Phe	Pro	Gly	Phe	Tyr	Lys	Ala	Val	Val	Ile	Ser	Asp	Glu	Arg	Val	Met
		195					200					205			
Lys	Ala	Ile	Lys	Glu	Met	Leu	Asp	Arg	Gln	Gln	Pro	Tyr	Ile	Gly	Ala
	210					215					220				
Phe	Met	Leu	Lys	Asn	Ser	Glu	Glu	Asp	Thr	Asp	Val	Ile	Thr	Asp	Lys
225					230					235					240
Asn	Asp	Val	Tyr	Asp	Val	Gly	Val	Leu	Ala	Gln	Ile	Thr	Ser	Ala	Phe
				245					250					255	
Pro	Ser	Lys	Asp	Glu	Lys	Thr	Gly	Thr	Glu	Thr	Met	Thr	Ala	Leu	Leu
			260					265					270		
Tyr	Pro	His	Arg	Arg	Ile	Lys	Ile	Asp	Glu	Leu	Phe	Pro	Pro	Asn	Glu
		275					280					285			
Glu	Lys	Glu	Lys	Ser	Lys	Glu	Gln	Ala	Lys	Asp	Thr	Asp	Thr	Glu	Thr
	290					295					300				
Thr	Val	Val	Glu	Asp	Ala	Asn	Asn	Pro	Glu	Asp	Gln	Glu	Ser	Thr	Ser
305					310					315					320
Pro	Ala	Thr	Pro	Lys	Leu	Glu	Asp	Ile	Val	Val	Glu	Arg	Ile	Pro	Asp
				325					330					335	
Ser	Glu	Leu	Gln	His	His	Lys	Arg	Val	Glu	Ala	Thr	Glu	Glu	Glu	Ser
			340					345					350		
Glu	Glu	Leu	Asp	Asp	Ile	Gln	Glu	Gly	Glu	Asp	Ile	Asn	Pro	Thr	Glu

355

360

365

Phe Leu Lys Asn Tyr Asn Val Ser Leu Val Asn Val Leu Asn Leu Glu  
 370 375 380

Asp Glu Pro Phe Asp Arg Lys Ser Pro Val Ile Asn Ala Leu Thr Ser  
 385 390 395 400

Glu Ile Leu Lys Val Phe Lys Glu Ile Ser Gln Leu Asn Thr Met Phe  
 405 410 415

Arg Glu Gln Ile Ala Thr Phe Ser Ala Ser Ile Gln Ser Ala Thr Thr  
 420 425 430

Asn Ile Phe Glu Glu Pro Ala Arg Leu Ala Asp Phe Ala Ala Ala Val  
 435 440 445

Ser Ala Gly Glu Glu Asp Glu Leu Gln Asp Ile Leu Ser Ser Leu Asn  
 450 455 460

Ile Glu His Arg Leu Glu Lys Ser Leu Leu Val Leu Lys Lys Glu Leu  
 465 470 475 480

Met Asn Ala Glu Leu Gln Asn Lys Ile Ser Lys Asp Val Glu Thr Lys  
 485 490 495

Ile Gln Lys Arg Gln Arg Glu Tyr Tyr Leu Met Glu Gln Leu Lys Gly  
 500 505 510

Ile Lys Arg Glu Leu Gly Ile Asp Asp Gly Arg Asp Lys Leu Ile Asp  
 515 520 525

Thr Tyr Lys Glu Arg Ile Lys Ser Leu Lys Leu Pro Asp Ser Val Gln  
 530 535 540

Lys Ile Phe Asp Asp Glu Ile Thr Lys Leu Ser Thr Leu Glu Thr Ser  
 545 550 555 560

Met Ser Glu Phe Gly Val Ile Arg Asn Tyr Leu Asp Trp Leu Thr Ser  
 565 570 575

Ile Pro Trp Gly Lys His Ser Lys Glu Gln Tyr Ser Ile Pro Arg Ala  
 580 585 590

Lys Lys Ile Leu Asp Glu Asp His Tyr Gly Met Val Asp Val Lys Asp  
 595 600 605

Arg Ile Leu Glu Phe Ile Ala Val Gly Lys Leu Leu Gly Lys Val Asp  
 Page 262

610

615

620

Gly Lys Ile Ile Cys Phe Val Gly Pro Pro Gly Val Gly Lys Thr Ser  
625 630 635 640

Ile Gly Lys Ser Ile Ala Arg Ala Leu Asn Arg Lys Phe Phe Arg Phe  
645 650 655

Ser Val Gly Gly Met Thr Asp Val Ala Glu Ile Lys Gly His Arg Arg  
660 665 670

Thr Tyr Ile Gly Ala Leu Pro Gly Arg Val Val Gln Ala Leu Lys Lys  
675 680 685

Cys Gln Thr Gln Asn Pro Leu Ile Leu Ile Asp Glu Ile Asp Lys Ile  
690 695 700

Gly His Gly Gly Ile His Gly Asp Pro Ser Ala Ala Leu Leu Glu Val  
705 710 715 720

Leu Asp Pro Glu Gln Asn Asn Ser Phe Leu Asp Asn Tyr Leu Asp Ile  
725 730 735

Pro Ile Asp Leu Ser Lys Val Leu Phe Val Cys Thr Ala Asn Ser Leu  
740 745 750

Glu Thr Ile Pro Arg Pro Leu Leu Asp Arg Met Glu Val Ile Glu Leu  
755 760 765

Thr Gly Tyr Val Ala Glu Asp Lys Val Lys Ile Ala Glu Gln Tyr Leu  
770 775 780

Val Pro Ser Ala Lys Lys Ser Ala Gly Leu Glu Asn Ser His Val Asp  
785 790 795 800

Met Thr Glu Asp Ala Ile Thr Ala Leu Met Lys Tyr Tyr Cys Arg Glu  
805 810 815

Ser Gly Val Arg Asn Leu Lys Lys His Ile Glu Lys Ile Tyr Arg Lys  
820 825 830

Ala Ala Leu Gln Val Val Lys Lys Leu Ser Ile Glu Asp Ser Pro Thr  
835 840 845

Ser Ser Ala Asp Ser Lys Pro Lys Glu Ser Val Ser Ser Glu Glu Lys  
850 855 860

Ala Glu Asn Asn Ala Lys Ser Ser Ser Glu Lys Thr Lys Asp Asn Asn  
Page 263

865		870		875		880
Ser Glu Lys Thr	Ser 885	Asp Asp Ile Glu	Ala 890	Leu Lys Thr Ser	Glu 895	Lys
Ile Asn Val	Ser 900	Ile Ser Gln Lys	Asn 905	Leu Lys Asp Tyr	Val 910	Gly Pro
Pro Val	Tyr 915	Thr Thr Asp Arg	Leu 920	Tyr Glu Thr Thr	Pro 925	Pro Gly Val
Val Met	Gly 930	Leu Ala Trp	Thr 935	Asn Met Gly Gly	Cys 940	Ser Leu Tyr Val
Glu 945	Ser Val	Leu Glu Gln	Pro 950	Leu His Asn	Cys 955	Lys His Pro Thr Phe 960
Glu Arg Thr	Gly	Gln Leu Gly Asp	Val 965	Met Lys Glu Ser	Ser 970	Arg Leu 975
Ala Tyr Ser	Phe 980	Ala Lys Met Tyr	Leu 985	Ala Gln Lys Phe	Pro 990	Glu Asn
Arg Phe	Phe 995	Glu Lys Ala Ser	Ile 1000	His Leu His Cys	Pro 1005	Glu Gly Ala
Thr Pro	Lys 1010	Asp Gly Pro	Ser 1015	Ala Gly Val Thr	Met 1020	Ala Thr Ser
Phe Leu	Ser 1025	Leu Ala Leu	Asn 1030	Lys Ser Ile Asp	Pro 1035	Thr Val Ala
Met Thr	Gly 1040	Glu Leu Thr	Leu 1045	Thr Gly Lys Val	Leu 1050	Arg Ile Gly
Gly Leu	Arg 1055	Glu Lys Ala	Val 1060	Ala Ala Lys Arg	Ser 1065	Gly Ala Lys
Thr Ile	Ile 1070	Phe Pro Lys	Asp 1075	Asn Leu Asn Asp	Trp 1080	Glu Glu Leu
Pro Asp	Asn 1085	Val Lys Glu	Gly 1090	Leu Glu Pro Leu	Ala 1095	Ala Asp Trp
Tyr Asn	Asp 1100	Ile Phe Gln	Lys 1105	Leu Phe Lys Asp	Val 1110	Asn Thr Lys
Glu Gly	Asn Ser Val	Trp Lys	Ala Glu	Phe Glu Ile	Leu Asp	Ala

1115

1120

1125

Lys Lys Glu Lys Asp  
1130

<210> 138  
<211> 232  
<212> PRT  
<213> *Saccharomyces cerevisiae*  
<400> 138

Met Phe Pro Tyr Leu Thr Arg Met Asn Leu Ser Ile Lys Met Gly Gly  
1 5 10 15

Leu Thr Leu Lys Glu Ser Ser Pro Asn Ala Phe Leu Asn Asn Thr Thr  
20 25 30

Ile Ala Arg Arg Phe Lys His Glu Tyr Ala Pro Arg Phe Lys Ile Val  
35 40 45

Gln Lys Lys Gln Lys Gly Arg Val Pro Val Arg Thr Gly Gly Ser Ile  
50 55 60

Lys Gly Ser Thr Leu Gln Phe Gly Lys Tyr Gly Leu Arg Leu Lys Ser  
65 70 75 80

Glu Gly Ile Arg Ile Ser Ala Gln Gln Leu Lys Glu Ala Asp Asn Ala  
85 90 95

Ile Met Arg Tyr Val Arg Pro Leu Asn Asn Gly His Leu Trp Arg Arg  
100 105 110

Leu Cys Thr Asn Val Ala Val Cys Ile Lys Gly Asn Glu Thr Arg Met  
115 120 125

Gly Lys Gly Lys Gly Gly Phe Asp His Trp Met Val Arg Val Pro Thr  
130 135 140

Gly Lys Ile Leu Phe Glu Ile Asn Gly Asp Asp Leu His Glu Lys Val  
145 150 155 160

Ala Arg Glu Ala Phe Arg Lys Ala Gly Thr Lys Leu Pro Gly Val Tyr  
165 170 175

Glu Phe Val Ser Leu Asp Ser Leu Val Arg Val Gly Leu His Ser Phe  
180 185 190

Lys Asn Pro Lys Asp Asp Pro Val Lys Asn Phe Tyr Asp Glu Asn Ala  
195 200 205

Lys Lys Pro Ser Lys Lys Tyr Leu Asn Ile Leu Lys Ser Gln Glu Pro  
210 215 220

Gln Tyr Lys Leu Phe Arg Gly Arg  
225 230

<210> 139  
<211> 541  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 139

Met Leu Arg Leu Ala Arg Phe Tyr Ser Leu Ala Arg Thr Lys Ala Ile  
1 5 10 15

His Ser His Gly Ala Pro Phe Arg Pro Glu Tyr Ala Leu Lys Cys Gly  
20 25 30

Leu Glu Ile His Thr Gln Leu Asn Thr Lys Asn Lys Leu Phe Ser Gln  
35 40 45

Ser Thr Asn Ser Ala Thr Ser Leu Val Asp Ala Pro Asn His His Thr  
50 55 60

Ser Tyr Tyr Asp Ile Ala Leu Pro Gly Thr Gln Pro Val Leu Asn Leu  
65 70 75 80

Glu Ala Ile Leu Phe Ala Met Lys Leu Ser Leu Ala Leu Gly Ser Gln  
85 90 95

Val Asn Ser Ile Ser Gln Phe Asp Arg Lys His Tyr Phe Tyr Gly Asp  
100 105 110

Gln Pro Gln Gly Tyr Gln Leu Thr Gln His Tyr Arg Pro Phe Ala Arg  
115 120 125

Gly Gly Lys Ile Asn Leu Ser Lys Glu Leu Asp Asp Ile Asp Glu Ser  
130 135 140

Ala Lys Glu Ile Gly Ile Leu Gln Leu Gln Ile Glu Gln Asp Thr Gly  
145 150 155 160

Lys Ser His Tyr Thr Glu Thr Asp Lys Asp Val Ile Thr Leu Val Asp  
165 170 175

Leu Asn Arg Ser Asn Val Pro Leu Ile Glu Leu Val Thr Lys Pro Asp  
180 185 190

Phe Ser Asp Ile Lys Gln Val Arg Ala Phe Ile Lys Lys Tyr Gln Asn  
195 200 205  
Leu Val Arg His Leu His Ile Ser Ser Gly Asp Leu Glu Thr Gly Ala  
210 215 220  
Met Arg Val Asp Val Asn Leu Ser Ile Asn Glu Tyr Ala Arg Val Glu  
225 230 235 240  
Leu Lys Asn Leu Pro Asn Thr Ser Ser Ile Ile Asn Ala Ile Lys Tyr  
245 250 255  
Glu Tyr Gln Arg Gln Val Glu Leu Ile Ser Val Gly Asp Thr Ser Ser  
260 265 270  
Leu Met Glu Pro Glu Thr Arg Gly Trp Thr Gly Ser Ser Thr Val Lys  
275 280 285  
Leu Arg Ser Lys Glu Thr Thr Ile Asp Tyr Arg Tyr Met Pro Asp Pro  
290 295 300  
Glu Leu Pro Tyr Ile Asn Leu Ala Pro Asp Val Ile Ser Gly Val Arg  
305 310 315 320  
Gly Leu Met Pro Gln Leu Pro Asp Asp Ile Met Arg Ile Leu Met Lys  
325 330 335  
Lys Pro Tyr Gln Leu Ser Leu Lys Asp Ala Lys Ile Leu Thr Tyr Asn  
340 345 350  
Ser Asn Gln Asn Asp Met Tyr Asn His Glu Ala Leu Arg Ser Tyr Tyr  
355 360 365  
Leu Asp Thr Phe Arg Glu Phe Ser Lys Leu Ala Gly Glu Arg Ser Asn  
370 375 380  
Ala Lys Leu Pro Thr Asn Trp Ile Ile His Glu Phe Leu Gly Asp Leu  
385 390 395 400  
Asn Lys Leu Gln Ile Pro Leu Ala Lys Ala Lys Glu Ile Leu Ala Pro  
405 410 415  
Pro Val Phe Ala Gln Phe Leu Lys Leu Leu His Glu Glu Val Ile Ser  
420 425 430  
Ala Thr Ser Gly Lys Met Leu Leu Phe His Ile Leu Glu Asn Phe Glu  
435 440 445

Gln Ser Asn Cys Gln Asp Leu Ser Ile Pro Asp Phe Ser Lys Leu Ile  
450 455 460

Glu Lys Phe Glu Leu His Ala Ile Asn Gln Val Asp Pro Gln Glu Leu  
465 470 475 480

Met Asp Leu Cys Asn Asp Val Ile Ala Gln His Thr Asp Asp Thr Phe  
485 490 495

Ile Arg Asn Leu Val Thr Gly Lys Lys Lys Ser Ser Leu Lys Phe Leu  
500 505 510

Ile Gly Gln Gly Met Arg Arg Ser Gln Gly Arg Ile Lys Ala Asn Glu  
515 520 525

Phe Glu Lys Lys Phe Lys Glu Ile Leu Asn Ile Gln Trp  
530 535 540

<210> 140  
<211> 177  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 140

Met Leu Lys Ser Thr Leu Arg Leu Ser Arg Ile Ser Leu Arg Arg Gly  
1 5 10 15

Phe Thr Thr Ile Asp Cys Leu Arg Gln Gln Asn Ser Asp Ile Asp Lys  
20 25 30

Ile Ile Leu Asn Pro Ile Lys Leu Ala Gln Gly Ser Asn Ser Asp Arg  
35 40 45

Gly Gln Thr Ser Lys Ser Lys Thr Asp Asn Ala Asp Ile Leu Ser Met  
50 55 60

Glu Ile Pro Val Asp Met Met Gln Ser Ala Gly Arg Ile Asn Lys Arg  
65 70 75 80

Glu Leu Leu Ser Glu Ala Glu Ile Ala Arg Ser Ser Val Glu Asn Ala  
85 90 95

Gln Met Arg Phe Asn Ser Gly Lys Ser Ile Ile Val Asn Lys Asn Asn  
100 105 110

Pro Ala Glu Ser Phe Lys Arg Leu Asn Arg Ile Met Phe Glu Asn Asn  
115 120 125



Ile Pro Gly Asp Lys Arg Ser Gln Arg Phe Tyr Met Lys Pro Gly Lys  
130 135 140

Val Ala Glu Leu Lys Arg Ser Gln Arg His Arg Lys Glu Phe Met Met  
145 150 155 160

Gly Phe Lys Arg Leu Ile Glu Ile Val Lys Asp Ala Lys Arg Lys Gly  
165 170 175

Tyr

<210> 141  
<211> 162  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 141

Met Ser Ser Ser Gln Val Val Arg Asp Ser Ala Lys Lys Leu Val Asn  
1 5 10 15

Leu Leu Glu Lys Tyr Pro Lys Asp Arg Ile His His Leu Val Ser Phe  
20 25 30

Arg Asp Val Gln Ile Ala Arg Phe Arg Arg Val Ala Gly Leu Pro Asn  
35 40 45

Val Asp Asp Lys Gly Lys Ser Ile Lys Glu Lys Lys Pro Ser Leu Asp  
50 55 60

Glu Ile Lys Ser Ile Ile Asn Arg Thr Ser Gly Pro Leu Gly Leu Asn  
65 70 75 80

Lys Glu Met Leu Thr Lys Ile Gln Asn Lys Met Val Asp Glu Lys Phe  
85 90 95

Thr Glu Glu Ser Ile Asn Glu Gln Ile Arg Ala Leu Ser Thr Ile Met  
100 105 110

Asn Asn Lys Phe Arg Asn Tyr Tyr Asp Ile Gly Asp Lys Leu Tyr Lys  
115 120 125

Pro Ala Gly Asn Pro Gln Tyr Tyr Gln Arg Leu Ile Asn Ala Val Asp  
130 135 140

Gly Lys Lys Lys Glu Ser Leu Phe Thr Ala Met Arg Thr Val Leu Phe  
145 150 155 160

Gly Lys

<210> 142  
 <211> 196  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 142

Met Pro Pro Glu Arg Thr Gly Thr Asn Ala Asn Glu His Thr Phe Cys  
 1 5 10 15

Ser Leu Leu Met Leu Lys Ser Ile Phe Ala Lys Arg Phe Ala Ser Thr  
 20 25 30

Gly Ser Tyr Pro Gly Ser Thr Arg Ile Thr Leu Pro Arg Arg Pro Ala  
 35 40 45

Lys Lys Ile Gln Leu Gly Lys Ser Arg Pro Ala Ile Tyr His Gln Phe  
 50 55 60

Asn Val Lys Met Glu Leu Ser Asp Gly Ser Val Val Ile Arg Arg Ser  
 65 70 75 80

Gln Tyr Pro Lys Gly Glu Ile Arg Leu Ile Gln Asp Gln Arg Asn Asn  
 85 90 95

Pro Leu Trp Asn Pro Ser Arg Asp Asp Leu Val Val Val Asp Ala Asn  
 100 105 110

Ser Gly Gly Ser Leu Asp Arg Phe Asn Lys Arg Tyr Ser Ser Leu Phe  
 115 120 125

Ser Val Asp Ser Thr Thr Pro Asn Ser Ser Ser Glu Thr Val Glu Leu  
 130 135 140

Ser Glu Glu Asn Lys Lys Lys Thr Gln Ile Lys Lys Glu Glu Lys Glu  
 145 150 155 160

Asp Val Ser Glu Lys Ala Phe Gly Met Asp Asp Tyr Leu Ser Leu Leu  
 165 170 175

Asp Asp Ser Glu Gln Gln Ile Lys Ser Gly Lys Leu Ala Ser Lys Lys  
 180 185 190

Arg Asp Lys Lys  
 195

<210> 143  
 <211> 278

<212> PRT  
<213> Saccharomyces cerevisiae

<400> 143

Met Phe Ser Arg Leu Ser Leu Phe Arg Arg Ala Ala Leu Ala Pro Ala  
1 5 10 15

Pro Met Arg Met Ser Phe Arg Thr Ile Tyr Gln Lys Thr Glu Asp Glu  
20 25 30

Leu Pro Arg Arg Ile Val Pro Lys Leu Ala Thr Phe Tyr Ser Ala Asn  
35 40 45

Pro Asn His Glu Asp Arg Ile Asn Arg Leu Glu Arg Leu Leu Arg Lys  
50 55 60

Tyr Ile Lys Leu Pro Ser Gln Asn Asn Asn Glu Ala Gln Gln Thr Lys  
65 70 75 80

Ala Pro Trp Ile Ser Phe Asp Glu Tyr Ala Leu Ile Gly Gly Gly Thr  
85 90 95

Lys Leu Lys Pro Thr Gln Tyr Thr Gln Leu Leu Tyr Met Leu Asn Lys  
100 105 110

Leu His Asn Ile Asp Pro Gln Leu Thr Asn Asp Glu Ile Thr Ser Glu  
115 120 125

Leu Ser Gln Tyr Tyr Lys Lys Ser Ser Met Leu Ser Asn Asn Ile Lys  
130 135 140

Ile Lys Thr Leu Asp Glu Phe Gly Arg Ser Ile Ala Val Gly Lys Arg  
145 150 155 160

Lys Ser Ser Thr Ala Lys Val Phe Val Val Arg Gly Thr Gly Glu Ile  
165 170 175

Leu Val Asn Gly Arg Gln Leu Asn Asp Tyr Phe Leu Lys Met Lys Asp  
180 185 190

Arg Glu Ser Ile Met Tyr Pro Leu Gln Val Ile Glu Ser Val Gly Lys  
195 200 205

Tyr Asn Ile Phe Ala Thr Thr Ser Gly Gly Gly Pro Thr Gly Gln Ala  
210 215 220

Glu Ser Ile Met His Ala Ile Ala Lys Ala Leu Val Val Phe Asn Pro  
225 230 235 240

Leu Leu Lys Ser Arg Leu His Lys Ala Gly Val Leu Thr Arg Asp Tyr  
245 250 255

Arg His Val Glu Arg Lys Lys Pro Gly Lys Lys Lys Ala Arg Lys Met  
260 265 270

Pro Thr Trp Val Lys Arg  
275

<210> 144  
<211> 366  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 144

Met Phe Ser Arg Leu Pro Thr Ser Leu Ala Arg Asn Val Ala Arg Arg  
1 5 10 15

Ala Pro Thr Ser Phe Val Arg Pro Ser Ala Ala Ala Ala Ala Leu Arg  
20 25 30

Phe Ser Ser Thr Lys Thr Met Thr Val Arg Glu Ala Leu Asn Ser Ala  
35 40 45

Met Ala Glu Glu Leu Asp Arg Asp Asp Asp Val Phe Leu Ile Gly Glu  
50 55 60

Glu Val Ala Gln Tyr Asn Gly Ala Tyr Lys Val Ser Lys Gly Leu Leu  
65 70 75 80

Asp Arg Phe Gly Glu Arg Arg Val Val Asp Thr Pro Ile Thr Glu Tyr  
85 90 95

Gly Phe Thr Gly Leu Ala Val Gly Ala Ala Leu Lys Gly Leu Lys Pro  
100 105 110

Ile Val Glu Phe Met Ser Phe Asn Phe Ser Met Gln Ala Ile Asp His  
115 120 125

Val Val Asn Ser Ala Ala Lys Thr His Tyr Met Ser Gly Gly Thr Gln  
130 135 140

Lys Cys Gln Met Val Phe Arg Gly Pro Asn Gly Ala Ala Val Gly Val  
145 150 155 160

Gly Ala Gln His Ser Gln Asp Phe Ser Pro Trp Tyr Gly Ser Ile Pro  
165 170 175

Gly Leu Lys Val Leu Val Pro Tyr Ser Ala Glu Asp Ala Arg Gly Leu  
180 185 190

Leu Lys Ala Ala Ile Arg Asp Pro Asn Pro Val Val Phe Leu Glu Asn  
195 200 205

Glu Leu Leu Tyr Gly Glu Ser Phe Glu Ile Ser Glu Glu Ala Leu Ser  
210 215 220

Pro Glu Phe Thr Leu Pro Tyr Lys Ala Lys Ile Glu Arg Glu Gly Thr  
225 230 235 240

Asp Ile Ser Ile Val Thr Tyr Thr Arg Asn Val Gln Phe Ser Leu Glu  
245 250 255

Ala Ala Glu Ile Leu Gln Lys Lys Tyr Gly Val Ser Ala Glu Val Ile  
260 265 270

Asn Leu Arg Ser Ile Arg Pro Leu Asp Thr Glu Ala Ile Ile Lys Thr  
275 280 285

Val Lys Lys Thr Asn His Leu Ile Thr Val Glu Ser Thr Phe Pro Ser  
290 295 300

Phe Gly Val Gly Ala Glu Ile Val Ala Gln Val Met Glu Ser Glu Ala  
305 310 315 320

Phe Asp Tyr Leu Asp Ala Pro Ile Gln Arg Val Thr Gly Ala Asp Val  
325 330 335

Pro Thr Pro Tyr Ala Lys Glu Leu Glu Asp Phe Ala Phe Pro Asp Thr  
340 345 350

Pro Thr Ile Val Lys Ala Val Lys Glu Val Leu Ser Ile Glu  
355 360 365

<210> 145  
<211> 520  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 145

Met Leu Lys Ser Ala Ser Gln Asn Phe Phe Arg Ala Tyr Ser Ser Arg  
1 5 10 15

Ile Gly Arg Tyr Ala Ala Thr Ala Ser Gly Lys Leu Ala Gln Ser Arg  
20 25 30

Leu Ser Asn Ile Pro Thr Pro Lys Ala Leu Lys Lys Phe Leu Asp Glu  
Page 273

35

40

45

Tyr Ile Val Gly Gln Glu Ile Gly Lys Lys Val Leu Ser Val Ala Val  
50 55 60

Tyr Asn His Tyr Leu Arg Ile Asn Asp Lys Gln Lys Lys Gly Glu Leu  
65 70 75 80

Gln Arg Gln Arg Glu Leu Met Glu Arg Glu Lys Ile Ala Asp Asp Arg  
85 90 95

Asp Glu Pro Ile Phe Ser Gly Asn Ser Glu Ser Lys Ala Gly Trp Arg  
100 105 110

Asn Leu Gln Arg Gln Phe Asn Leu Ala Gly Arg Glu Val Asp Glu Asp  
115 120 125

Leu Glu Leu Ser Lys Ser Asn Val Leu Val Val Gly Pro Ser Gly Ser  
130 135 140

Gly Lys Thr Leu Leu Ala Thr Thr Leu Ala Lys Ile Leu Asn Val Pro  
145 150 155 160

Ile Ala Ile Thr Asp Cys Thr Gln Leu Thr Gln Ala Gly Tyr Ile Gly  
165 170 175

Glu Asp Val Glu Val Cys Ile Glu Arg Leu Leu Val Asn Ala Glu Phe  
180 185 190

Asp Val Ala Arg Ala Glu Lys Gly Ile Ile Val Leu Asp Glu Ile Asp  
195 200 205

Lys Leu Ala Lys Pro Ala Ala Ser Ile Gly Thr Lys Asp Val Ser Gly  
210 215 220

Glu Gly Val Gln Gln Ser Leu Leu Lys Ile Ile Glu Gly His Lys Val  
225 230 235 240

Glu Ile Thr Val Lys Arg Pro Val Lys His Asp Ile Asp Gly Gln Lys  
245 250 255

Asn Gln Thr Thr Thr Lys Lys Asp Glu Val Phe Val Val Asp Thr Ser  
260 265 270

Asn Ile Leu Phe Met Ile Met Gly Ala Phe Val Gly Leu Asp Lys His  
275 280 285

Ile Val Lys Arg Ile Glu Asp Met Lys Lys Ile Gln Lys Ala Gly Glu  
Page 274

290	295	300
Ser Val Glu Ser Ser Asn Ser Lys Glu Val Glu Lys Glu Arg Ala Lys 305 310 315 320		
Lys Phe Arg Phe Ser Asn Thr Leu Glu Gln Val Glu Leu Asp Asn Gly 325 330 335		
Lys Lys Val Cys Ala Leu Asp Leu Thr Thr Pro Thr Asp Leu Val Ser 340 345 350		
Phe Gly Leu Ile Pro Glu Leu Ile Gly Arg Val Pro Ile Ile Thr Ala 355 360 365		
Leu Gln Pro Leu Gln Arg Asp Asp Leu Phe His Ile Leu Lys Glu Pro 370 375 380		
Lys Asn Ala Leu Leu Asp Gln Tyr Glu Tyr Ile Phe Lys Gln Phe Gly 385 390 395 400		
Val Arg Leu Cys Val Thr Gln Lys Ala Leu Lys Lys Val Ala Gln Phe 405 410 415		
Ala Leu Lys Glu Gly Thr Gly Ala Arg Gly Leu Arg Gly Ile Met Glu 420 425 430		
Arg Leu Leu Leu Asn Val Asn Tyr Asp Cys Pro Gly Ser Asn Ile Ala 435 440 445		
Tyr Val Leu Ile Asp Glu Ala Thr Val Asp Ser Leu Gln Glu Thr Glu 450 455 460		
His Ser Leu Ala Ser Gln Val Asp Val Lys Tyr Tyr Ser Gly Asp Glu 465 470 475 480		
Lys Asp Ser Leu Ile Arg Asp Val Ser Glu Glu Asp Lys Lys Leu Gly 485 490 495		
Val Met Leu Glu Lys Glu Leu Gly His Ser Ala Asn Ile His Thr Pro 500 505 510		
Thr Ile Pro Lys Arg Ser Leu Thr 515 520		

<210> 146  
 <211> 307  
 <212> PRT  
 <213> Saccharomyces cerevisiae

<400> 146

Met Phe Lys Arg Gln Leu Ser Thr Ser Val Arg Tyr Leu Gln His Tyr  
1 5 10 15

Asp Glu Ser Leu Leu Ser Arg Tyr Tyr Pro Glu Ser Leu Leu Lys Ser  
20 25 30

Ile Lys Leu Ala Gln Gln Thr Ile Pro Glu Asp Thr Lys Phe Arg Val  
35 40 45

Ser Arg Asn Val Glu Phe Ala Pro Pro Tyr Leu Asp Asp Phe Thr Lys  
50 55 60

Ile His Pro Phe Trp Asp Tyr Lys Pro Gly Met Pro His Leu His Ala  
65 70 75 80

Gln Glu Glu Asn Asn Asn Phe Ser Ile Phe Arg Trp Asp Gln Val Gln  
85 90 95

Gln Pro Leu Pro Gly Glu Gly Asn Ile Leu Pro Pro Gly Val Ser Leu  
100 105 110

Pro Asn Asp Gly Gly Arg Lys Ser Lys Ser Ala Asp Val Ala Ala Gly  
115 120 125

Leu His Lys Gln Thr Gly Val Asp Pro Asp Tyr Ile Thr Arg Lys Leu  
130 135 140

Thr Met Lys Pro Leu Val Met Lys Arg Val Ser Asn Gln Thr Gly Lys  
145 150 155 160

Gly Lys Ile Ala Ser Phe Tyr Ala Leu Val Val Val Gly Asp Lys Asn  
165 170 175

Gly Met Val Gly Leu Gly Glu Gly Lys Ser Arg Glu Glu Met Ser Lys  
180 185 190

Ala Ile Phe Lys Ala His Trp Asp Ala Val Arg Asn Leu Lys Glu Ile  
195 200 205

Pro Arg Tyr Glu Asn Arg Thr Ile Tyr Gly Asp Ile Asp Phe Arg Tyr  
210 215 220

His Gly Val Lys Leu His Leu Arg Ser Ala Lys Pro Gly Phe Gly Leu  
225 230 235 240

Arg Val Asn His Val Ile Phe Glu Ile Cys Glu Cys Ala Gly Ile Lys  
245 250 255



Asp Leu Ser Gly Lys Val Tyr Lys Ser Arg Asn Asp Met Asn Ile Ala  
260 265 270

Lys Gly Thr Ile Glu Ala Phe Thr Lys Ala Gln Lys Thr Leu Asp Glu  
275 280 285

Val Ala Leu Gly Arg Gly Lys Lys Leu Val Asp Val Arg Lys Val Tyr  
290 295 300

Tyr Ser Ser  
305

<210> 147  
<211> 105  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 147

Met Leu Ala Arg Ser Leu Gly Tyr Arg Leu Ile Ser Thr Ser Arg Ile  
1 5 10 15

Leu Tyr Asn Lys Pro Thr Val Lys Ser Val Val Ser Ser Cys Pro Ala  
20 25 30

Gly Thr Ser Leu Asn Leu Asn Ile Trp Lys Ser Gly Lys Asp Ala Val  
35 40 45

Ala Leu Glu Asp Lys Glu Tyr Pro Asn Trp Leu Trp Ser Val Leu Asp  
50 55 60

Ser Asp His Val Val Glu His Ala Ala Glu Asp Pro Glu Gly Gln Ala  
65 70 75 80

Leu Leu Lys Arg Arg Lys Asn Ile Arg Lys Ala Asn Arg Gln Arg Ile  
85 90 95

Lys Gln Asn Asn Phe Leu Ser Gln Leu  
100 105

<210> 148  
<211> 146  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 148

Met Lys Gly Ser Pro Ile Ser Gln Phe Ser Lys Thr Ser Ile Asn Ala  
1 5 10 15

Leu Thr Arg Pro Trp Lys Lys Tyr Arg Asp Gly Glu Leu Phe Tyr Gly  
20 25 30

Leu Ser Lys Val Gly Asn Lys Arg Val Pro Leu Thr Thr Lys Gln Gly  
35 40 45

Asn Lys Thr Met Tyr Lys Gly Thr Arg Ala Ser Gly Ile Gly Arg His  
50 55 60

Thr Lys Phe Gly Gly Tyr Val Ile Asn Trp Lys Lys Val Arg Thr Tyr  
65 70 75 80

Val Thr Pro Asp Met Val Asn Phe Glu Leu Lys Pro Tyr Val Asn Ala  
85 90 95

Asn Val Pro Pro Leu Lys His Glu Phe Lys Gly Phe Ser Gly Gly Pro  
100 105 110

Leu Asp Pro Arg Leu Gln Leu Leu Lys Ile Lys Glu Tyr Ile Val Asn  
115 120 125

Gly Arg Val Gln Ser Glu Gly Ala Thr Asp Thr Ser Cys Tyr Lys Glu  
130 135 140

Arg Gly  
145

<210> 149  
<211> 183  
<212> PRT  
<213> *Saccharomyces cerevisiae*  
<400> 149

Met Asn Ser Leu Ile Phe Gly Lys Gln Leu Ala Phe His Lys Ile Val  
1 5 10 15

Pro Thr Thr Ala Ile Gly Trp Leu Val Pro Leu Gly Asn Pro Ser Leu  
20 25 30

Gln Ile Pro Gly Gln Lys Gln Leu Gly Ser Ile His Arg Trp Leu Arg  
35 40 45

Glu Lys Leu Gln Gln Asp His Lys Asp Thr Glu Asp Lys Asp Phe Phe  
50 55 60

Ser Asn Asn Gly Ile Leu Leu Ala Val Pro Lys Lys Lys Val Ser His  
65 70 75 80

Gln Lys Lys Arg Gln Lys Leu Tyr Gly Pro Gly Lys Lys Gln Leu Lys  
Page 278

85

90

95

Met Ile His His Leu Asn Lys Cys Pro Ser Cys Gly His Tyr Lys Arg  
 100 105 110

Ala Asn Thr Leu Cys Met Tyr Cys Val Gly Gln Ile Ser His Ile Trp  
 115 120 125

Lys Thr His Thr Ala Lys Glu Glu Ile Lys Pro Arg Gln Glu Glu Glu  
 130 135 140

Leu Ser Glu Leu Asp Gln Arg Val Leu Tyr Pro Gly Arg Arg Asp Thr  
 145 150 155 160

Lys Tyr Thr Lys Asp Leu Lys Asp Lys Asp Asn Tyr Leu Glu Arg Arg  
 165 170 175

Val Arg Thr Leu Lys Lys Asp  
 180

<210> 150  
 <211> 492  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 150

Met Phe His Ala Phe Thr Phe Leu Lys Gly Gly Arg Phe Tyr Ser Ser  
 1 5 10 15

Leu Thr Val Lys Ser Leu Tyr Glu Gln Val His His Thr Ser His Asp  
 20 25 30

Pro Ile Ser Ile Asn Gly Trp Ile Lys Ser Ile Arg Leu Leu Lys Arg  
 35 40 45

Ile Ala Phe Leu Asp Leu Gln Asp Gly Thr Ser Val Asn Pro Leu Arg  
 50 55 60

Ile Val Ile Pro Leu Thr Asn Thr Asp Glu Val Gln Phe Leu Lys Ile  
 65 70 75 80

Leu Lys Thr Gly Gln Thr Leu Ser Ile Ser Asn Ala Thr Trp Gln Ser  
 85 90 95

Thr Pro Asn Arg Lys Gln Pro Phe Glu Leu Gln Ile Lys Asn Pro Val  
 100 105 110

Lys Ser Ile Lys Leu Val Gly Pro Val Ser Glu Asn Tyr Pro Leu Gln  
 115 120 125

Lys Lys Tyr Gln Thr Leu Arg Tyr Leu Arg Ser Leu Pro Thr Leu Lys  
130 135 140

Tyr Arg Thr Ala Tyr Leu Ser Ala Ile Leu Arg Leu Arg Ser Phe Val  
145 150 155 160

Glu Phe Gln Phe Met Leu Tyr Phe Gln Lys Asn His Phe Thr Lys Val  
165 170 175

Ser Pro Pro Ile Leu Thr Ser Asn Asp Cys Glu Gly Ala Gly Glu Leu  
180 185 190

Phe Gln Val Ser Thr Asn Thr Ser Pro Thr Ala Ser Ser Tyr Phe Gly  
195 200 205

Lys Pro Thr Tyr Leu Thr Val Ser Thr Gln Leu His Leu Glu Ile Leu  
210 215 220

Ala Leu Ser Leu Ser Arg Cys Trp Thr Leu Ser Pro Cys Phe Arg Ala  
225 230 235 240

Glu Lys Ser Asp Thr Pro Arg His Leu Ser Glu Phe Trp Met Leu Glu  
245 250 255

Val Glu Met Cys Phe Val Asn Ser Val Asn Glu Leu Thr Ser Phe Val  
260 265 270

Glu Thr Thr Ile Lys His Ile Ile Lys Ala Cys Ile Asp Asn Gln Gln  
275 280 285

Glu Leu Leu Pro Lys Gln Phe Ile Ser Ser Gln Glu Asn Asn Ala Ser  
290 295 300

Ser Glu Leu Ser Ile Asn Gln Glu Thr Gln Gln Ile Lys Thr Arg Trp  
305 310 315 320

Glu Asp Leu Ile Asn Glu Lys Trp His Asn Ile Thr Tyr Thr Asn Ala  
325 330 335

Ile Glu Ile Leu Lys Lys Arg His Asn Glu Val Ser His Phe Lys Tyr  
340 345 350

Glu Pro Lys Trp Gly Gln Pro Leu Gln Thr Glu His Glu Lys Phe Leu  
355 360 365

Ala Gly Glu Tyr Phe Lys Ser Pro Val Phe Val Thr Asp Tyr Pro Arg  
370 375 380

Leu Cys Lys Pro Phe Tyr Met Lys Gln Asn Ser Thr Pro Asp Asp Thr  
 385 390 395 400

Val Gly Cys Phe Asp Leu Leu Val Pro Gly Met Gly Glu Ile Ile Gly  
 405 410 415

Gly Ser Leu Arg Glu Asp Asp Tyr Asp Lys Leu Cys Arg Glu Met Lys  
 420 425 430

Ala Arg Gly Met Asn Arg Ser Gly Glu Leu Asp Trp Tyr Val Ser Leu  
 435 440 445

Arg Lys Glu Gly Ser Ala Pro His Gly Gly Phe Gly Leu Gly Phe Glu  
 450 455 460

Arg Phe Ile Ser Tyr Leu Tyr Gly Asn His Asn Ile Lys Asp Ala Ile  
 465 470 475 480

Pro Phe Tyr Arg Thr Ser Ala Glu Ser Ile Asp Phe  
 485 490

<210> 151  
 <211> 135  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 151

Met Phe Leu Arg Thr Gln Ala Arg Phe Phe His Ala Thr Thr Lys Lys  
 1 5 10 15

Met Asp Phe Ser Lys Met Ser Ile Val Gly Arg Ile Gly Ser Glu Phe  
 20 25 30

Thr Glu His Thr Ser Ala Asn Asn Asn Arg Tyr Leu Lys Tyr Ser Ile  
 35 40 45

Ala Ser Gln Pro Arg Arg Asp Gly Gln Thr Asn Trp Tyr Asn Ile Thr  
 50 55 60

Val Phe Asn Glu Pro Gln Ile Asn Phe Leu Thr Glu Tyr Val Arg Lys  
 65 70 75 80

Gly Ala Leu Val Tyr Val Glu Ala Asp Ala Ala Asn Tyr Val Phe Glu  
 85 90 95

Arg Asp Asp Gly Ser Lys Gly Thr Thr Leu Ser Leu Val Gln Lys Asp  
 100 105 110

Ile Asn Leu Leu Lys Asn Gly Lys Lys Leu Glu Asp Ala Glu Gly Gln  
115 120 125

Glu Asn Ala Ala Ser Ser Glu  
130 135

<210> 152  
<211> 169  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 152

Met Trp Ser Arg Asn Val Arg Leu Leu Gly Ser Trp Thr Arg Ser Tyr  
1 5 10 15

Met Val Pro Ala Thr Lys Arg Lys Thr Ile Pro Val Tyr Pro Pro Val  
20 25 30

Gln Arg Ile Ala Ser Ser Gln Ile Met Lys Gln Val Ala Leu Ser Glu  
35 40 45

Ile Glu Ser Leu Asp Pro Gly Ala Val Lys Arg Lys Leu Ile Ser Lys  
50 55 60

Lys Asn Lys Asp Arg Leu Lys Ala Gly Asp Val Val Arg Ile Val Tyr  
65 70 75 80

Asp Ser Ser Lys Cys Ser Tyr Asp Thr Phe Val Gly Tyr Ile Leu Ser  
85 90 95

Ile Asp Arg Lys Gln Leu Val Gln Asp Ala Ser Leu Leu Leu Arg Asn  
100 105 110

Gln Ile Ala Lys Thr Ala Val Glu Ile Arg Val Pro Leu Phe Ser Pro  
115 120 125

Leu Ile Glu Arg Ile Asp Leu Leu Thr Pro His Val Ser Ser Arg Gln  
130 135 140

Arg Asn Lys His Tyr Tyr Ile Arg Gly Thr Arg Leu Asp Val Gly Asp  
145 150 155 160

Leu Glu Ala Gly Leu Arg Arg Lys Lys  
165

<210> 153  
<211> 249  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 153

Met Leu Gln Leu Arg Phe Met Pro Gly Trp Val Pro Arg Asn Gly Phe  
1 5 10 15

Phe Gly Leu Lys Glu Thr Ile Gly Thr Val His Lys Arg Phe Tyr Ala  
20 25 30

Leu Ala Ser Glu Gln Pro Ser Arg Lys Thr Val Lys Pro Leu Asp Ser  
35 40 45

Arg Lys Thr Phe Leu Ile Asp Thr Tyr Lys His Leu Met Glu Asn Ser  
50 55 60

Ser Met Ile Phe Phe Val His Tyr Asn Asn Leu Ser Lys Thr Glu Asp  
65 70 75 80

His His Phe Arg Phe Lys Ile Lys Gln Thr Gly Gly Lys Leu Thr Lys  
85 90 95

Val Arg Asn Asn Leu Phe Glu Val Tyr Leu Arg Asn Ser His Leu Pro  
100 105 110

Asp Pro Cys Gly Phe Val Lys Arg Lys Glu Gln Asn Trp Lys His Pro  
115 120 125

Leu Leu Pro Leu Leu Lys Gly Pro Thr Ala Thr Ile Thr Tyr Glu Asp  
130 135 140

Thr Asn Pro Gln Gln Val Ala Lys Leu Leu Lys Val Leu Gln Ser Ala  
145 150 155 160

Gln Asp Lys Leu Met Val Ile Gly Ala Lys Val Glu Asn Glu Val Leu  
165 170 175

Asn Val Glu Lys Ile Asn Thr Phe Lys Thr Leu Pro Thr Lys Pro Glu  
180 185 190

Met Gln Ser Gln Leu Val Ser Val Leu Gln Met Leu Ser Gly Leu Gly  
195 200 205

Leu Val Arg Thr Leu Glu Asn Ser Ser Asn Ala Leu Tyr Leu Thr Leu  
210 215 220

Lys Ser His Asn Asp Asn Gln Lys Pro Lys Glu Asp Val Glu Ser Thr  
225 230 235 240

Thr Asp Ala Glu Ser Lys Gly Ser Lys

<210> 154  
 <211> 463  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 154

Met Leu Ser Arg Ala Thr Arg Thr Ala Ala Ala Lys Ser Leu Val Lys  
 1 5 10 15

Ser Lys Val Ala Arg Asn Val Met Ala Ala Ser Phe Val Lys Arg His  
 20 25 30

Ala Ser Thr Ser Leu Phe Lys Gln Ala Asn Lys Val Glu Ser Leu Gly  
 35 40 45

Ser Ile Tyr Leu Ser Gly Lys Lys Ile Ser Val Ala Ala Asn Pro Phe  
 50 55 60

Ser Ile Thr Ser Asn Arg Phe Lys Ser Thr Ser Ile Glu Val Pro Pro  
 65 70 75 80

Met Ala Glu Ser Leu Thr Glu Gly Ser Leu Lys Glu Tyr Thr Lys Asn  
 85 90 95

Val Gly Asp Phe Ile Lys Glu Asp Glu Leu Leu Ala Thr Ile Glu Thr  
 100 105 110

Asp Lys Ile Asp Ile Glu Val Asn Ser Pro Val Ser Gly Thr Val Thr  
 115 120 125

Lys Leu Asn Phe Lys Pro Glu Asp Thr Val Thr Val Gly Glu Glu Leu  
 130 135 140

Ala Gln Val Glu Pro Gly Glu Ala Pro Ala Glu Gly Ser Gly Glu Ser  
 145 150 155 160

Lys Pro Glu Pro Thr Glu Gln Ala Glu Pro Ser Gln Gly Val Ala Ala  
 165 170 175

Arg Glu Asn Ser Ser Glu Glu Thr Ala Ser Lys Lys Glu Ala Ala Pro  
 180 185 190

Lys Lys Glu Ala Ala Pro Lys Lys Glu Val Thr Glu Pro Lys Lys Ala  
 195 200 205

Asp Gln Pro Lys Lys Thr Val Ser Lys Ala Gln Glu Pro Pro Val Ala  
 210 215 220



Ser Asn Ser Phe Thr Pro Phe Pro Arg Thr Glu Thr Arg Val Lys Met  
225 230 235 240

Asn Arg Met Arg Leu Arg Ile Ala Glu Arg Leu Lys Glu Ser Gln Asn  
245 250 255

Thr Ala Ala Ser Leu Thr Thr Phe Asn Glu Val Asp Met Ser Ala Leu  
260 265 270

Met Glu Met Arg Lys Leu Tyr Lys Asp Glu Ile Ile Lys Lys Thr Gly  
275 280 285

Thr Lys Phe Gly Phe Met Gly Leu Phe Ser Lys Ala Cys Thr Leu Ala  
290 295 300

Ala Lys Asp Ile Pro Ala Val Asn Gly Ala Ile Glu Gly Asp Gln Ile  
305 310 315 320

Val Tyr Arg Asp Tyr Thr Asp Ile Ser Val Ala Val Ala Thr Pro Lys  
325 330 335

Gly Leu Val Thr Pro Val Val Arg Asn Ala Glu Ser Leu Ser Val Leu  
340 345 350

Asp Ile Glu Asn Glu Ile Val Arg Leu Ser His Lys Ala Arg Asp Gly  
355 360 365

Lys Leu Thr Leu Glu Asp Met Thr Gly Gly Thr Phe Thr Ile Ser Asn  
370 375 380

Gly Gly Val Phe Gly Ser Leu Tyr Gly Thr Pro Ile Ile Asn Ser Pro  
385 390 395 400

Gln Thr Ala Val Leu Gly Leu His Gly Val Lys Glu Arg Pro Val Thr  
405 410 415

Val Asn Gly Gln Ile Val Ser Arg Pro Met Met Tyr Leu Ala Leu Thr  
420 425 430

Tyr Asp His Arg Leu Leu Asp Gly Arg Glu Ala Val Thr Phe Leu Lys  
435 440 445

Thr Val Lys Glu Leu Ile Glu Asp Pro Arg Lys Met Leu Leu Trp  
450 455 460

<210> 155  
<211> 664

<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 155

Met Leu Thr Ser Ile Leu Ile Lys Gly Arg Thr Pro Val Leu Ala Ser  
1 5 10 15

Arg Asn Leu Leu Ala Ala Leu Ser Asn Cys Asn His Ile Thr Trp Ala  
20 25 30

Val Ser Arg Arg Leu Tyr Asn Asp Gly Asn Arg Asp Gln Arg Asn Phe  
35 40 45

Gly Arg Asn Gln Arg Asn Asn Asn Ser Asn Arg Tyr Arg Asn Ser Arg  
50 55 60

Phe Asn Ser Arg Pro Arg Thr Arg Ser Arg Glu Asp Asp Asp Glu Val  
65 70 75 80

His Phe Asp Lys Thr Thr Phe Ser Lys Leu Ile His Val Pro Lys Glu  
85 90 95

Asp Asn Ser Lys Glu Val Thr Leu Asp Ser Leu Leu Glu Glu Gly Val  
100 105 110

Leu Asp Lys Glu Ile His Lys Ala Ile Thr Arg Met Glu Phe Pro Gly  
115 120 125

Leu Thr Pro Val Gln Gln Lys Thr Ile Lys Pro Ile Leu Ser Ser Glu  
130 135 140

Asp His Asp Val Ile Ala Arg Ala Lys Thr Gly Thr Gly Lys Thr Phe  
145 150 155 160

Ala Phe Leu Ile Pro Ile Phe Gln His Leu Ile Asn Thr Lys Phe Asp  
165 170 175

Ser Gln Tyr Met Val Lys Ala Val Ile Val Ala Pro Thr Arg Asp Leu  
180 185 190

Ala Leu Gln Ile Glu Ala Glu Val Lys Lys Ile His Asp Met Asn Tyr  
195 200 205

Gly Leu Lys Lys Tyr Ala Cys Val Ser Leu Val Gly Gly Thr Asp Phe  
210 215 220

Arg Ala Ala Met Asn Lys Met Asn Lys Leu Arg Pro Asn Ile Val Ile  
225 230 235 240

Ala Thr Pro Gly Arg Leu Ile Asp Val Leu Glu Lys Tyr Ser Asn Lys  
 245 250 255  
 Phe Phe Arg Phe Val Asp Tyr Lys Val Leu Asp Glu Ala Asp Arg Leu  
 260 265 270  
 Leu Glu Ile Gly Phe Arg Asp Asp Leu Glu Thr Ile Ser Gly Ile Leu  
 275 280 285  
 Asn Glu Lys Asn Ser Lys Ser Ala Asp Asn Ile Lys Thr Leu Leu Phe  
 290 295 300  
 Ser Ala Thr Leu Asp Asp Lys Val Gln Lys Leu Ala Asn Asn Ile Met  
 305 310 315 320  
 Asn Lys Lys Glu Cys Leu Phe Leu Asp Thr Val Asp Lys Asn Glu Pro  
 325 330 335  
 Glu Ala His Glu Arg Ile Asp Gln Ser Val Val Ile Ser Glu Lys Phe  
 340 345 350  
 Ala Asn Ser Ile Phe Ala Ala Val Glu His Ile Lys Lys Gln Ile Lys  
 355 360 365  
 Glu Arg Asp Ser Asn Tyr Lys Ala Ile Ile Phe Ala Pro Thr Val Lys  
 370 375 380  
 Phe Thr Ser Phe Leu Cys Ser Ile Leu Lys Asn Glu Phe Lys Lys Asp  
 385 390 395 400  
 Leu Pro Ile Leu Glu Phe His Gly Lys Ile Thr Gln Asn Lys Arg Thr  
 405 410 415  
 Ser Leu Val Lys Arg Phe Lys Lys Asp Glu Ser Gly Ile Leu Val Cys  
 420 425 430  
 Thr Asp Val Gly Ala Arg Gly Met Asp Phe Pro Asn Val His Glu Val  
 435 440 445  
 Leu Gln Ile Gly Val Pro Ser Glu Leu Ala Asn Tyr Ile His Arg Ile  
 450 455 460  
 Gly Arg Thr Ala Arg Ser Gly Lys Glu Gly Ser Ser Val Leu Phe Ile  
 465 470 475 480  
 Cys Lys Asp Glu Leu Pro Phe Val Arg Glu Leu Glu Asp Ala Lys Asn  
 485 490 495

Ile Val Ile Ala Lys Gln Glu Lys Tyr Glu Pro Ser Glu Glu Ile Lys  
500 505 510

Ser Glu Val Leu Glu Ala Val Thr Glu Glu Pro Glu Asp Ile Ser Asp  
515 520 525

Ile Val Ile Ser Leu Ile Ser Ser Tyr Arg Ser Cys Ile Lys Glu Tyr  
530 535 540

Arg Phe Ser Glu Arg Arg Ile Leu Pro Glu Ile Ala Ser Thr Tyr Gly  
545 550 555 560

Val Leu Leu Asn Asp Pro Gln Leu Lys Ile Pro Val Ser Arg Arg Phe  
565 570 575

Leu Asp Lys Leu Gly Leu Ser Arg Ser Pro Ile Gly Lys Ala Met Phe  
580 585 590

Glu Ile Arg Asp Tyr Ser Ser Arg Asp Gly Asn Asn Lys Ser Tyr Asp  
595 600 605

Tyr Asp Asp Asp Ser Glu Ile Ser Phe Arg Gly Asn Lys Asn Tyr Asn  
610 615 620

Asn Arg Ser Gln Asn Arg Asp Tyr Asp Asp Glu Pro Phe Arg Arg Ser  
625 630 635 640

Asn Asn Asn Arg Arg Ser Phe Ser Arg Ser Asn Asp Lys Asn Asn Tyr  
645 650 655

Ser Ser Arg Asn Ser Asn Ile Tyr  
660

<210> 156  
<211> 147  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 156

Met Leu Ala Gln Thr Phe Lys Lys Pro His Arg Ala Val Leu Glu Gln  
1 5 10 15

Val Ser Gly Thr Thr Val Phe Ile Arg Asn Lys Arg Thr Lys Ser Lys  
20 25 30

Ser Ser Leu Ser Pro Leu Ala Gln Arg Val Val Thr Gln Leu Ser Val  
35 40 45

Met Ser Ala Ser Arg Lys Gln Pro Lys Leu Leu Lys Leu Ala Arg Glu  
50 55 60

Asp Leu Ile Lys His Gln Thr Ile Glu Lys Cys Trp Ser Ile Tyr Gln  
65 70 75 80

Gln Gln Gln Arg Glu Arg Arg Asn Leu Gln Leu Glu Leu Gln Tyr Lys  
85 90 95

Ser Ile Glu Arg Ser Met Asn Leu Leu Gln Glu Leu Ser Pro Arg Leu  
100 105 110

Phe Glu Ala Ala Asn Ala Ser Glu Lys Gly Lys Arg Phe Pro Met Glu  
115 120 125

Met Lys Val Pro Thr Asp Phe Pro Pro Asn Thr Leu Trp His Tyr Asn  
130 135 140

Phe Arg Lys  
145

<210> 157  
<211> 499  
<212> PRT  
<213> Saccharomyces cerevisiae  
<400> 157

Met Leu Arg Ile Arg Ser Leu Leu Asn Asn Lys Arg Ala Phe Ser Ser  
1 5 10 15

Thr Val Arg Thr Leu Thr Ile Asn Lys Ser His Asp Val Val Ile Ile  
20 25 30

Gly Gly Gly Pro Ala Gly Tyr Val Ala Ala Ile Lys Ala Ala Gln Leu  
35 40 45

Gly Phe Asn Thr Ala Cys Val Glu Lys Arg Gly Lys Leu Gly Gly Thr  
50 55 60

Cys Leu Asn Val Gly Cys Ile Pro Ser Lys Ala Leu Leu Asn Asn Ser  
65 70 75 80

His Leu Phe His Gln Met His Thr Glu Ala Gln Lys Arg Gly Ile Asp  
85 90 95

Val Asn Gly Asp Ile Lys Ile Asn Val Ala Asn Phe Gln Lys Ala Lys  
100 105 110

Asp Asp Ala Val Lys Gln Leu Thr Gly Gly Ile Glu Leu Leu Phe Lys  
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115					120					125					
Lys	Asn	Lys	Val	Thr	Tyr	Tyr	Lys	Gly	Asn	Gly	Ser	Phe	Glu	Asp	Glu
	130					135					140				
Thr	Lys	Ile	Arg	Val	Thr	Pro	Val	Asp	Gly	Leu	Glu	Gly	Thr	Val	Lys
145					150					155					160
Glu	Asp	His	Ile	Leu	Asp	Val	Lys	Asn	Ile	Ile	Val	Ala	Thr	Gly	Ser
				165					170					175	
Glu	Val	Thr	Pro	Phe	Pro	Gly	Ile	Glu	Ile	Asp	Glu	Glu	Lys	Ile	Val
			180					185					190		
Ser	Ser	Thr	Gly	Ala	Leu	Ser	Leu	Lys	Glu	Ile	Pro	Lys	Arg	Leu	Thr
		195					200					205			
Ile	Ile	Gly	Gly	Gly	Ile	Ile	Gly	Leu	Glu	Met	Gly	Ser	Val	Tyr	Ser
	210					215					220				
Arg	Leu	Gly	Ser	Lys	Val	Thr	Val	Val	Glu	Phe	Gln	Pro	Gln	Ile	Gly
225					230					235					240
Ala	Ser	Met	Asp	Gly	Glu	Val	Ala	Lys	Ala	Thr	Gln	Lys	Phe	Leu	Lys
				245					250					255	
Lys	Gln	Gly	Leu	Asp	Phe	Lys	Leu	Ser	Thr	Lys	Val	Ile	Ser	Ala	Lys
			260					265					270		
Arg	Asn	Asp	Asp	Lys	Asn	Val	Val	Glu	Ile	Val	Val	Glu	Asp	Thr	Lys
		275					280					285			
Thr	Asn	Lys	Gln	Glu	Asn	Leu	Glu	Ala	Glu	Val	Leu	Leu	Val	Ala	Val
	290					295					300				
Gly	Arg	Arg	Pro	Tyr	Ile	Ala	Gly	Leu	Gly	Ala	Glu	Lys	Ile	Gly	Leu
305					310					315					320
Glu	Val	Asp	Lys	Arg	Gly	Arg	Leu	Val	Ile	Asp	Asp	Gln	Phe	Asn	Ser
				325					330					335	
Lys	Phe	Pro	His	Ile	Lys	Val	Val	Gly	Asp	Val	Thr	Phe	Gly	Pro	Met
			340					345					350		
Leu	Ala	His	Lys	Ala	Glu	Glu	Glu	Gly	Ile	Ala	Ala	Val	Glu	Met	Leu
		355					360					365			
Lys	Thr	Gly	His	Gly	His	Val	Asn	Tyr	Asn	Asn	Ile	Pro	Ser	Val	Met

370

375

380

Tyr Ser His Pro Glu Val Ala Trp Val Gly Lys Thr Glu Glu Gln Leu  
385 390 395 400

Lys Glu Ala Gly Ile Asp Tyr Lys Ile Gly Lys Phe Pro Phe Ala Ala  
405 410 415

Asn Ser Arg Ala Lys Thr Asn Gln Asp Thr Glu Gly Phe Val Lys Ile  
420 425 430

Leu Ile Asp Ser Lys Thr Glu Arg Ile Leu Gly Ala His Ile Ile Gly  
435 440 445

Pro Asn Ala Gly Glu Met Ile Ala Glu Ala Gly Leu Ala Leu Glu Tyr  
450 455 460

Gly Ala Ser Ala Glu Asp Val Ala Arg Val Cys His Ala His Pro Thr  
465 470 475 480

Leu Ser Glu Ala Phe Lys Glu Ala Asn Met Ala Ala Tyr Asp Lys Ala  
485 490 495

Ile His Cys

<210> 158  
<211> 427  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 158

Met Tyr Ser Arg Lys Ser Leu Ser Leu Ile Ser Lys Cys Gly Gln Leu  
1 5 10 15

Ser Arg Leu Asn Ala Gln Ala Ala Leu Gln Ala Arg Arg His Leu Ser  
20 25 30

Ile His Glu Tyr Arg Ser Ala Gln Leu Leu Arg Glu Tyr Gly Ile Gly  
35 40 45

Thr Pro Glu Gly Phe Pro Ala Phe Thr Pro Glu Glu Ala Phe Glu Ala  
50 55 60

Ala Lys Lys Leu Asn Thr Asn Lys Leu Val Ile Lys Ala Gln Ala Leu  
65 70 75 80

Thr Gly Gly Arg Gly Lys Gly His Phe Asp Thr Gly Tyr Lys Ser Gly  
85 90 95

Val His Met Ile Glu Ser Pro Gln Gln Ala Glu Asp Val Ala Lys Glu  
 100 105 110  
 Met Leu Asn His Asn Leu Ile Thr Lys Gln Thr Gly Ile Ala Gly Lys  
 115 120 125  
 Pro Val Ser Ala Val Tyr Ile Val Lys Arg Val Asp Thr Lys His Glu  
 130 135 140  
 Ala Tyr Leu Ser Ile Leu Met Asp Arg Gln Thr Lys Lys Pro Met Ile  
 145 150 155 160  
 Ile Ala Ser Ser Gln Gly Gly Met Asn Ile Glu Glu Val Ala Glu Arg  
 165 170 175  
 Thr Pro Asp Ala Ile Lys Lys Phe Ser Ile Glu Thr Ser Lys Gly Leu  
 180 185 190  
 Ser Pro Gln Met Ala Lys Asp Val Ala Lys Ser Leu Gly Phe Ser Pro  
 195 200 205  
 Asp Ala Gln Asp Glu Ala Ala Lys Ala Val Ser Asn Leu Tyr Lys Ile  
 210 215 220  
 Phe Met Glu Arg Asp Ala Thr Gln Val Glu Ile Asn Pro Leu Ser Glu  
 225 230 235 240  
 Ile Glu His Asp Pro Thr His Lys Ile Met Cys Thr Asp Ala Lys Phe  
 245 250 255  
 Gly Phe Asp Asp Asn Ala Ser Phe Arg Gln Glu Lys Ile Tyr Ser Trp  
 260 265 270  
 Arg Asp Leu Ser Gln Glu Asp Pro Asp Glu Val Lys Ala Lys Lys Tyr  
 275 280 285  
 Asp Leu Asn Phe Val Lys Leu Lys Gly Asn Ile Gly Cys Leu Val Asn  
 290 295 300  
 Gly Ala Gly Leu Ala Met Ala Thr Met Asp Val Ile Lys Leu Asn Gly  
 305 310 315 320  
 Gly Asp Pro Ala Asn Phe Leu Asp Cys Gly Gly Gly Ala Thr Pro Glu  
 325 330 335  
 Thr Ile Lys Gln Gly Phe Glu Leu Ile Leu Ser Asn Lys Asn Val Asp  
 340 345 350



Ala Ile Phe Val Asn Ile Phe Gly Gly Ile Val Arg Cys Asp Tyr Val  
355 360 365

Ala Leu Gly Leu Val Glu Ala Ala Arg Glu Leu Glu Val Arg Val Pro  
370 375 380

Ile Val Ala Arg Leu Gln Gly Thr Lys Val Glu Glu Gly Arg Asp Ile  
385 390 395 400

Ile Asn Lys Ser Gly Val Lys Ile Tyr Ser Phe Asp Glu Leu Asp Pro  
405 410 415

Ala Ala Lys Lys Val Val Glu Leu Thr Gln Asn  
420 425

<210> 159  
<211> 233  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 159

Met Phe Ala Lys Thr Ala Ala Ala Asn Leu Thr Lys Lys Gly Gly Leu  
1 5 10 15

Ser Leu Leu Ser Thr Thr Ala Arg Arg Thr Lys Val Thr Leu Pro Asp  
20 25 30

Leu Lys Trp Asp Phe Gly Ala Leu Glu Pro Tyr Ile Ser Gly Gln Ile  
35 40 45

Asn Glu Leu His Tyr Thr Lys His His Gln Thr Tyr Val Asn Gly Phe  
50 55 60

Asn Thr Ala Val Asp Gln Phe Gln Glu Leu Ser Asp Leu Leu Ala Lys  
65 70 75 80

Glu Pro Ser Pro Ala Asn Ala Arg Lys Met Ile Ala Ile Gln Gln Asn  
85 90 95

Ile Lys Phe His Gly Gly Gly Phe Thr Asn His Cys Leu Phe Trp Glu  
100 105 110

Asn Leu Ala Pro Glu Ser Gln Gly Gly Gly Glu Pro Pro Thr Gly Ala  
115 120 125

Leu Ala Lys Ala Ile Asp Glu Gln Phe Gly Ser Leu Asp Glu Leu Ile  
130 135 140

Lys Leu Thr Asn Thr Lys Leu Ala Gly Val Gln Gly Ser Gly Trp Ala  
 145 150 155 160

Phe Ile Val Lys Asn Leu Ser Asn Gly Gly Lys Leu Asp Val Val Gln  
 165 170 175

Thr Tyr Asn Gln Asp Thr Val Thr Gly Pro Leu Val Pro Leu Val Ala  
 180 185 190

Ile Asp Ala Trp Glu His Ala Tyr Tyr Leu Gln Tyr Gln Asn Lys Lys  
 195 200 205

Ala Asp Tyr Phe Lys Ala Ile Trp Asn Val Val Asn Trp Lys Glu Ala  
 210 215 220

Ser Arg Arg Phe Asp Ala Gly Lys Ile  
 225 230

<210> 160  
 <211> 266  
 <212> PRT  
 <213> Saccharomyces cerevisiae

<400> 160

Met Phe Leu Arg Ser Val Asn Arg Ala Val Thr Arg Ser Ile Leu Thr  
 1 5 10 15

Thr Pro Lys Pro Ala Val Val Lys Ser Ser Trp Arg Val Phe Thr Val  
 20 25 30

Ala Asn Ser Lys Arg Cys Phe Thr Pro Ala Ala Ile Met Arg Asn Gln  
 35 40 45

Glu Thr Gln Arg Val Gly Asp Ile Leu Gln Ser Glu Leu Lys Ile Glu  
 50 55 60

Lys Glu Thr Leu Pro Glu Ser Thr Ser Leu Asp Ser Phe Asn Asp Phe  
 65 70 75 80

Leu Asn Lys Tyr Lys Phe Ser Leu Val Glu Thr Pro Gly Lys Asn Glu  
 85 90 95

Ala Glu Ile Val Arg Arg Thr Glu Ser Gly Glu Thr Val His Val Phe  
 100 105 110

Phe Asp Val Ala Gln Ile Ala Asn Leu Pro Tyr Asn Asn Ala Met Asp  
 115 120 125

Glu Asn Thr Glu Gln Asn Glu Asp Gly Ile Asn Glu Asp Asp Phe Asp  
130 135 140

Ala Leu Ser Asp Asn Phe Ala Asn Val Asn Val Val Ile Ser Lys Glu  
145 150 155 160

Ser Ala Ser Glu Pro Ala Val Ser Phe Glu Leu Leu Met Asn Leu Gln  
165 170 175

Glu Gly Ser Phe Tyr Val Asp Ser Ala Thr Pro Tyr Pro Ser Val Asp  
180 185 190

Ala Ala Leu Asn Gln Ser Ala Glu Ala Glu Ile Thr Arg Glu Leu Val  
195 200 205

Tyr His Gly Pro Pro Phe Ser Asn Leu Asp Glu Glu Leu Gln Glu Ser  
210 215 220

Leu Glu Ala Tyr Leu Glu Ser Arg Gly Val Asn Glu Glu Leu Ala Ser  
225 230 235 240

Phe Ile Ser Ala Tyr Ser Glu Phe Lys Glu Asn Asn Glu Tyr Ile Ser  
245 250 255

Trp Leu Glu Lys Met Lys Lys Phe Phe His  
260 265

<210> 161  
<211> 224  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 161

Met Ala Ser Thr Leu Leu Thr Ile Ile Thr Ser Ile Leu Arg Cys Thr  
1 5 10 15

Gly Phe Ile Leu Ser Lys Ile Ala Lys Gly Ser Arg Ile Arg Glu Leu  
20 25 30

Leu Glu Arg Cys Arg Ser Ser Leu Gly Val Asp Leu His Ser Leu Leu  
35 40 45

Lys Gln Leu Cys Arg Asp Asn Leu Lys Cys Val Ala Leu Ile Phe Met  
50 55 60

Leu Gln Leu Lys Phe Ile Trp Pro Val Ala Arg Ile Thr Pro Ile Tyr  
65 70 75 80

Arg Pro Phe Thr Ser His Pro Phe Arg Asn Leu Ala Thr Ser Ser Ser  
Page 295

85

90

95

Ile Ser Ser Thr Lys Ala Lys Thr Thr Lys Thr Asp Thr Thr Pro Leu  
 100 105 110

Lys Leu Ser Asn Glu Leu Tyr Ala Ile Phe Lys Ile His Asn Arg Pro  
 115 120 125

Tyr Leu Val Thr Glu Gly Asp Arg Val Ile Leu Pro Phe Lys Leu Lys  
 130 135 140

Gln Ala Glu Val Gly Asp Ile Leu Asn Met Thr Asp Val Thr Thr Leu  
 145 150 155 160

Gly Ser Arg Asn Tyr Lys Leu Val Gly His Pro Ile Asn Thr Ser Leu  
 165 170 175

Tyr Thr Leu Lys Ala Thr Val Val Gly Lys Thr Lys Arg Ala Phe Gln  
 180 185 190

Thr Arg Glu Val Thr Lys Arg Arg Asn Arg Arg Val Arg His Ala Lys  
 195 200 205

Ser Lys Gly Asp Leu Thr Ile Leu Arg Ile Ser Glu Leu Ser Met Asn  
 210 215 220

<210> 162  
 <211> 247  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 162

Met Leu His Cys Ala Arg Arg Tyr Met Leu Val Arg Pro Arg Leu Leu  
 1 5 10 15

Trp Gln Ser Gly Thr Cys Val Ala Arg Phe Gln Ser Ser Val Arg Thr  
 20 25 30

Pro Ala Ser Glu Pro Ser Ala Glu Lys Gly Val Asp Glu Trp Leu Glu  
 35 40 45

Ala Ile Asn Glu Leu Arg Glu Glu Phe Ser Ala Lys Glu Tyr Leu Pro  
 50 55 60

Glu Thr Ser Leu Ala Pro Pro Gly Gln Ser Lys Val Asp Leu Leu Gln  
 65 70 75 80

Gly Ser Gln Ala Gly Ser Lys Ile Lys Pro Thr Ala Glu Gln Leu Ala  
 85 90 95

Gln Trp Glu Ala Leu Lys Ser Val Pro Ile Pro Pro Arg Lys Asn Ala  
100 105 110

Thr Leu Asp His Ile Thr Asn Met Ile Met Arg His Gly Lys Lys Glu  
115 120 125

Lys Ala Gln Thr Ile Leu Ser Arg Ala Leu Tyr Leu Val Tyr Cys Gln  
130 135 140

Thr Arg Gln Asp Pro Ile Gln Ala Leu Glu Lys Ser Leu Asp Glu Leu  
145 150 155 160

Ala Pro Leu Met Met Thr Lys Thr Phe Asn Thr Gly Val Ala Lys Ala  
165 170 175

Ser Val Ile Pro Val Pro Leu Asn Lys Arg Gln Arg Asn Arg Ile Ala  
180 185 190

Trp Asn Trp Ile Val Gln Ser Ala Asn Gln Arg Val Ser Ser Asp Phe  
195 200 205

Ala Val Arg Leu Gly Glu Glu Leu Thr Ala Ile Ala Lys Gly Thr Ser  
210 215 220

Ser Ala Phe Glu Lys Arg Asp Gln Ile His Lys Thr Ala Ile Ala His  
225 230 235 240

Arg Ala Tyr Ile Gln Leu Lys  
245

<210> 163  
<211> 264  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 163

Met Phe Lys Ser Val Ala Lys Leu Gly Lys Ser Pro Ile Phe Tyr Leu  
1 5 10 15

Asn Ser Gln Arg Leu Ile His Ile Lys Thr Leu Thr Thr Pro Asn Glu  
20 25 30

Asn Ala Leu Lys Phe Leu Ser Thr Asp Gly Glu Met Leu Phe Thr Gln  
35 40 45

Thr Arg Gly Ser Lys Ser Ile Val Ile Lys Asn Thr Asp Glu Asn Leu  
50 55 60

Ile Asn His Ser Lys Leu Ala Gln Gln Ile Phe Leu Gln Cys Pro Gly  
65 70 75 80

Val Glu Ser Leu Met Ile Gly Asp Asp Phe Leu Thr Ile Asn Lys Asp  
85 90 95

Arg Met Val His Trp Asn Ser Ile Lys Pro Phe Thr Glu Ile Ile Asp  
100 105 110

Leu Leu Thr Lys Gln Leu Ala Tyr Gly Glu Asp Val Ile Ser Lys Glu  
115 120 125

Phe His Ala Val Gln Glu Glu Glu Gly Glu Gly Gly Tyr Lys Ile Asn  
130 135 140

Met Pro Lys Phe Glu Leu Thr Glu Glu Asp Glu Glu Val Ser Glu Leu  
145 150 155 160

Ile Glu Glu Leu Ile Asp Thr Phe Thr Arg Ile Arg Pro Ala Ile Leu  
165 170 175

Glu Asp Gly Gly Asp Ile Asp Tyr Arg Gly Trp Asp Pro Lys Thr Gly  
180 185 190

Thr Val Tyr Leu Arg Leu Gln Gly Ala Cys Thr Ser Cys Ser Ser Ser  
195 200 205

Glu Val Thr Leu Lys Tyr Gly Ile Glu Ser Met Leu Lys His Tyr Val  
210 215 220

Asp Glu Val Lys Phe Thr Glu Val Ile Gln Ile Met Asp Pro Glu Gln  
225 230 235 240

Glu Ile Ala Leu Lys Glu Phe Asp Lys Leu Glu Lys Lys Leu Glu Ser  
245 250 255

Ser Lys Asn Thr Ser His Glu Lys  
260

<210> 164  
<211> 258  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 164

Met Ile Asn Thr Gly Arg Ser Arg Asn Ser Val Leu Leu Ala His Arg  
1 5 10 15

Phe Leu Ser Thr Gly Gly Phe Trp Arg Gly Gly Thr Asn Gly Thr Met  
20 25 30  
Ser Arg Thr Ile Asn Asn Val Asp Pro Phe Lys Leu Lys Phe Thr Phe  
35 40 45  
Ile Pro Lys Thr Val Pro Ala Ala Asp Ser Val Ser Pro Asp Ser  
50 55 60  
Gln Arg Pro Gly Lys Lys Pro Phe Lys Phe Ile Val Ser Asp Gln Ser  
65 70 75 80  
Lys Ser Ser Lys Ala Ser Lys Ser Pro Lys Trp Ser Ser Tyr Ala Phe  
85 90 95  
Pro Ser Arg Glu Thr Ile Lys Ser His Glu Phe Thr Glu Ala Ile Lys  
100 105 110  
Lys Gln Asn Lys Ala Ile Asp Glu Gln Ile Ala Ala Ala Val Ser Lys  
115 120 125  
Asn Asp Cys Ser Cys Thr Glu Pro Pro Lys Lys Arg Lys Arg Lys Leu  
130 135 140  
Arg Pro Arg Lys Ala Leu Ile Thr Leu Ser Pro Lys Ala Ile Lys His  
145 150 155 160  
Leu Arg Ala Leu Leu Ala Gln Phe Thr Pro Glu Pro Lys Leu Ile Arg  
165 170 175  
Val Ser Ala Arg Asn Arg Gly Cys Ser Gly Leu Thr Tyr Asp Leu Gln  
180 185 190  
Tyr Glu Thr Glu Pro Gly Lys Phe Asp Glu Val Val Glu Gln Asp Gly  
195 200 205  
Val Lys Phe Val Ile Asp Ser Lys Ala Leu Phe Ser Ile Ile Gly Ser  
210 215 220  
Glu Met Asp Trp Phe Thr Ile Asp Asp Lys Leu Ala Ser Lys Phe Val  
225 230 235 240  
Phe Lys Asn Pro Asn Ser Lys Gly Thr Cys Gly Cys Gly Glu Ser Phe  
245 250 255  
Met Val

<210> 165  
 <211> 269  
 <212> PRT  
 <213> *Saccharomyces cerevisiae*

<400> 165

Met Lys Trp Leu Leu Phe Pro Ala Arg Ile Val Ala Arg Thr Arg Pro  
 1 5 10 15

Asn Leu Phe Ser Leu Tyr Arg Arg Ser Val Ser Gln Tyr Leu Arg Pro  
 20 25 30

Arg Thr Ile Gln Asn Leu Gln Ser Met Ala Gln Thr Pro Glu Leu Lys  
 35 40 45

Thr Lys Leu Phe Lys Pro Leu Val Trp Ile Asp Cys Glu Met Thr Gly  
 50 55 60

Leu Asp His Val Asn Asp Arg Ile Ile Glu Ile Cys Cys Ile Ile Thr  
 65 70 75 80

Asp Gly His Leu Ala Pro Val Lys Ala Ala Asp Gly Gln Gly Asp Ser  
 85 90 95

His Tyr Glu Ser Val Ile His Tyr Gly Pro Glu Val Met Asn Lys Met  
 100 105 110

Asn Glu Trp Cys Ile Glu His His Gly Asn Ser Gly Leu Thr Ala Lys  
 115 120 125

Val Leu Ala Ser Glu Lys Thr Leu Ala Gln Val Glu Asp Glu Leu Leu  
 130 135 140

Glu Tyr Ile Gln Arg Tyr Ile Pro Asp Lys Asn Val Gly Val Leu Ala  
 145 150 155 160

Gly Asn Ser Val His Met Asp Arg Leu Phe Met Val Arg Glu Phe Pro  
 165 170 175

Lys Val Ile Asp His Leu Phe Tyr Arg Ile Val Asp Val Ser Ser Ile  
 180 185 190

Met Glu Val Ala Arg Arg His Asn Pro Ala Leu Gln Ala Arg Asn Pro  
 195 200 205

Lys Lys Glu Ala Ala His Thr Ala Tyr Ser Asp Ile Lys Glu Ser Ile  
 210 215 220

Ala Gln Leu Gln Trp Tyr Met Asp Asn Tyr Leu Lys Pro Pro Gln Glu  
 Page 300





Ile Tyr Thr Val Ser Phe Gly Ile Arg Asn Phe Thr Asp Ile Gln Lys  
195 200 205

Gly Leu Asn Thr Ala Tyr Arg Val Leu Lys Pro Gly Gly Ile Phe Tyr  
210 215 220

Cys Leu Glu Phe Ser Lys Ile Glu Asn Pro Leu Met Asp Phe Ala Tyr  
225 230 235 240

Gln Gln Trp Ala Lys Val Leu Pro Val Met Gly Ser Met Ile Ala Asn  
245 250 255

Asp Tyr Asp Ser Tyr Gln Tyr Leu Val Glu Ser Ile Glu Arg Phe Pro  
260 265 270

Asp Gln Glu Thr Phe Lys Ser Met Ile Glu Lys Ala Gly Phe Lys Ser  
275 280 285

Ala Gly Tyr Glu Ser Leu Thr Phe Gly Ile Cys Ala Ile His Trp Gly  
290 295 300

Ile Lys Val  
305

<210> 167  
<211> 440  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 167

Arg Ile Ser Ser Thr Leu Leu Gln Arg Ser Lys Gln Leu Ile Asp Lys  
1 5 10 15

Tyr Ala Leu Tyr Val Pro Lys Thr Gly Ser Phe Pro Lys Gly Phe Glu  
20 25 30

Val Gly Tyr Thr Ala Ser Gly Val Lys Lys Asn Gly Ser Leu Asp Leu  
35 40 45

Gly Val Ile Leu Asn Thr Asn Lys Ser Arg Pro Ser Thr Ala Ala Ala  
50 55 60

Val Phe Thr Thr Asn Lys Phe Lys Ala Ala Pro Val Leu Thr Ser Lys  
65 70 75 80

Lys Val Leu Glu Thr Ala Arg Gly Lys Asn Ile Asn Ala Ile Val Val  
85 90 95

Asn Ser Gly Cys Ala Asn Ser Val Thr Gly Asp Leu Gly Met Lys Asp  
 100 105 110  
 Ala Gln Val Met Ile Asp Leu Val Asn Asp Lys Ile Gly Gln Lys Asn  
 115 120 125  
 Ser Thr Leu Val Met Ser Thr Gly Val Ile Gly Gln Arg Leu Gln Met  
 130 135 140  
 Asp Lys Ile Ser Thr Gly Ile Asn Lys Ile Phe Gly Glu Glu Lys Phe  
 145 150 155 160  
 Gly Ser Asp Phe Asn Ser Trp Leu Asn Val Ala Lys Ser Ile Cys Thr  
 165 170 175  
 Thr Asp Thr Phe Pro Lys Leu Val Thr Ser Arg Phe Lys Leu Pro Ser  
 180 185 190  
 Gly Thr Glu Tyr Thr Leu Thr Gly Met Ala Lys Gly Ala Gly Met Ile  
 195 200 205  
 Cys Pro Asn Met Ala Thr Leu Leu Gly Phe Ile Val Thr Asp Leu Pro  
 210 215 220  
 Ile Glu Ser Lys Ala Leu Gln Lys Met Leu Thr Phe Ala Thr Thr Arg  
 225 230 235 240  
 Ser Phe Asn Cys Ile Ser Val Asp Gly Asp Met Ser Thr Asn Asp Thr  
 245 250 255  
 Ile Cys Met Leu Ala Asn Gly Ala Ile Asp Thr Lys Glu Ile Asn Glu  
 260 265 270  
 Asp Ser Lys Asp Phe Glu Gln Val Lys Leu Gln Val Thr Glu Phe Ala  
 275 280 285  
 Gln Arg Leu Ala Gln Leu Val Val Arg Asp Gly Glu Gly Ser Thr Lys  
 290 295 300  
 Phe Val Thr Val Asn Val Lys Asn Ala Leu His Phe Glu Asp Ala Lys  
 305 310 315 320  
 Ile Ile Ala Glu Ser Ile Ser Asn Ser Met Leu Val Lys Thr Ala Leu  
 325 330 335  
 Tyr Gly Gln Asp Ala Asn Trp Gly Arg Ile Leu Cys Ala Ile Gly Tyr  
 340 345 350

Ala Lys Leu Asn Asp Leu Lys Ser Leu Asp Val Asn Lys Ile Asn Val  
355 360 365

Ser Phe Ile Ala Thr Asp Asn Ser Glu Pro Arg Glu Leu Lys Leu Val  
370 375 380

Ala Asn Gly Val Pro Gln Leu Glu Ile Asp Glu Thr Arg Ala Ser Glu  
385 390 395 400

Ile Leu Ala Leu Asn Asp Leu Glu Val Ser Val Asp Leu Gly Thr Gly  
405 410 415

Asp Gln Ala Ala Gln Phe Trp Thr Cys Asp Leu Ser His Glu Tyr Val  
420 425 430

Thr Ile Asn Gly Asp Tyr Arg Ser  
435 440

<210> 168  
<211> 183  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 168

Met Asn Ser Tyr Ser Leu Leu Thr Arg Ser Phe His Glu Ser Ser Lys  
1 5 10 15

Pro Leu Phe Asn Leu Ala Ser Thr Leu Leu Lys Ala Ser Lys Arg Thr  
20 25 30

Gln Leu Arg Asn Glu Leu Ile Lys Gln Gly Pro Lys Arg Pro Thr Ser  
35 40 45

Ala Tyr Phe Leu Tyr Leu Gln Asp His Arg Ser Gln Phe Val Lys Glu  
50 55 60

Asn Pro Thr Leu Arg Pro Ala Glu Ile Ser Lys Ile Ala Gly Glu Lys  
65 70 75 80

Trp Gln Asn Leu Glu Ala Asp Ile Lys Glu Lys Tyr Ile Ser Glu Arg  
85 90 95

Lys Lys Leu Tyr Ser Glu Tyr Gln Lys Ala Lys Lys Glu Phe Asp Glu  
100 105 110

Lys Leu Pro Pro Lys Lys Pro Ala Gly Pro Phe Ile Lys Tyr Ala Asn  
115 120 125

Glu Val Arg Ser Gln Val Phe Ala Gln His Pro Asp Lys Ser Gln Leu  
130 135 140

Asp Leu Met Lys Ile Ile Gly Asp Lys Trp Gln Ser Leu Asp Gln Ser  
145 150 155 160

Ile Lys Asp Lys Tyr Ile Gln Glu Tyr Lys Lys Ala Ile Gln Glu Tyr  
165 170 175

Asn Ala Arg Tyr Pro Leu Asn  
180

<210> 169  
<211> 706  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 169

Met Asp Lys Leu Thr Pro Ser Gln Trp Lys Val Ile Asn Lys Ser Tyr  
1 5 10 15

Glu Pro Ala Ser Thr Ile Lys Val Ile Ala Gly Pro Gly Ser Gly Lys  
20 25 30

Thr Leu Thr Leu Leu Tyr Lys Val Leu His Leu Ile Thr Val Glu Asn  
35 40 45

Ile Lys Pro Glu Glu Ile Leu Ile Phe Ser Leu Thr Asn Lys Ala Val  
50 55 60

Asp Ser Ile Ile Glu Asn Leu Leu Ser Ile Phe Glu Asn Ser His Thr  
65 70 75 80

Asn Lys Glu Ile Val His Gln Ile Gly Cys Tyr Thr Val His Gly Leu  
85 90 95

Ala Asn Arg Ile Val Val Glu Asn Glu Gly Met Ile Asn Ile Ile Glu  
100 105 110

Glu Ile Gly Trp Arg Gly Leu Met Lys Leu Leu Pro Pro Ser Lys Arg  
115 120 125

Thr Pro His His Phe Arg Ser Tyr Lys Glu Leu Glu Lys Val Val Lys  
130 135 140

Asp Tyr Lys Leu Asn Asn Ala Lys Asn Asn Asn Pro Val Ile Glu Lys  
145 150 155 160

Leu Val Glu Leu Met Asp Asn Cys Lys Val Met Thr Asn Asp Asp Leu  
Page 305

165

170

175

Ile Ile Arg Ala Lys Lys Tyr Leu Glu Leu Asp Ser Ser Asp Ser Asp  
 180 185 190

Ala Ser Ser Phe Thr Gln Asp Leu Arg Asn Lys Tyr Lys Val Val Leu  
 195 200 205

Ile Asp Glu Phe Gln Asp Leu Tyr Pro Ser Leu Ala Pro Leu Ile Thr  
 210 215 220

Met Ile Cys Lys Gly Lys Gln Leu Ile Met Phe Gly Asp Thr Asn Gln  
 225 230 235 240

Ser Ile Tyr Gly Phe Leu Gly Ser Asn Asn Glu Ile Met Ser Gln Leu  
 245 250 255

Asp Asn Leu His Pro Lys Asn Ser Thr Thr Val Leu Lys Leu Phe Asp  
 260 265 270

Asn Phe Arg Ser Thr Pro Glu Ile Ile Ser Leu Ala Ser Lys Ile Ile  
 275 280 285

Asn Arg Pro Leu Ala Glu Lys Gln Ile Ile Asp Asp Thr Asp Glu Thr  
 290 295 300

Pro Ser Glu Leu Val Arg Lys Leu Pro Ser Gly Val Ser Pro Gln Ile  
 305 310 315 320

Met Thr Phe Asp Asp Leu Ala Ala Glu Ser Glu Phe Ile Ile Asp Lys  
 325 330 335

Ile Thr Gln Leu Ile Cys Ser Ser Ala Lys Phe Ser Asp Ile Ala Ile  
 340 345 350

Leu Ser Arg Thr Asn Ser His Leu Thr Ala Ile Ala Ser Ile Leu Lys  
 355 360 365

Lys Tyr Gly Ile Pro Tyr Gln Lys Leu Lys Ser Gln Pro Asp Trp Met  
 370 375 380

Asp Asp Leu Arg Ile Gln Phe Leu Leu Asp Ile Leu Lys Val Cys Ser  
 385 390 395 400

Leu Ala Ser Asp Glu Lys His Asn Arg Glu Phe Asn Thr Gly Asp Lys  
 405 410 415

Trp Gln Ser Asn Phe Ser Ile Leu Val Thr Met Ser Ala Leu Lys Gly  
 Page 306

420	425	430
Ile Gly Asp Ala Ser Ile Gln Ala Leu Tyr Lys Ala Cys Ser Leu Lys		
435	440	445
Asn Leu Ser Ile Trp Lys Tyr Leu Thr Met Val Pro Asn Phe Glu Trp		
450	455	460
Pro Leu Gly Leu Ser Ile Lys Lys Lys Met Glu Asn Tyr Thr Ser Asn		
465	470	475
Leu Tyr Glu Met Ile Glu Asn Asp Gln Val His Gln Leu Asp Asp Pro		
485	490	495
Met Glu Leu Leu Glu Lys Val Ala Ser Ile Thr Asn Asn Leu Asn Leu		
500	505	510
Asn Pro Thr Tyr Phe Gln Ser Leu Ser Asp Ala Gln Ser Ser Leu Glu		
515	520	525
Phe Lys Thr His Leu Gln Glu Met Ala Gln Val Met Lys Val Ser Lys		
530	535	540
Ser Asn Lys Pro Pro Gly Ile Ser Phe Val Lys Trp Phe Leu Glu Thr		
545	550	555
Tyr Phe Asp Gln Thr Met Val Phe His Gln Ser Gln Gln Ala Leu Gln		
565	570	575
Thr Thr Gly Pro Gly Thr Val Lys Leu Ser Thr Ile His Ser Ala Lys		
580	585	590
Gly Leu Glu Phe Pro Ile Val Phe Leu Thr Asn Gly Ser Met Ser Asn		
595	600	605
Phe Pro Met Asp Thr Asn Ala Leu Tyr Val Gly Ile Thr Arg Ala Arg		
610	615	620
Asn Leu Leu Tyr Met Cys Asn Met Lys His Glu Arg Leu Val Ser Lys		
625	630	635
Ser Ser Pro Tyr Ser Arg Asn Ile Met Ser Asn Asn Leu Phe Trp Thr		
645	650	655
Tyr Tyr Asn Lys Asp Leu Lys Arg Ser Val Cys Asp Val Lys Val Thr		
660	665	670
His Gly Tyr Asn Val Gln Arg Tyr Asn Gln Leu Arg Lys Asn Phe Gly		

675

680

685

Phe Tyr Arg Ala Tyr Ser Ser Leu Arg Gly Cys Lys Ser Val Phe Arg  
 690 695 700

Arg Ile  
 705

<210> 170  
 <211> 285  
 <212> PRT  
 <213> Saccharomyces cerevisiae

<400> 170

Met Lys Phe Leu Leu Gln Gln Ile Arg Asn Met His Val Lys Pro Ile  
 1 5 10 15

Lys Met Arg Trp Leu Thr Gly Gly Val Asn Tyr Ser Tyr Leu Leu Ser  
 20 25 30

Thr Glu Asp Arg Arg Asn Ser Trp Leu Ile Asp Pro Ala Glu Pro Leu  
 35 40 45

Glu Val Ser Pro Lys Leu Ser Ala Glu Glu Lys Lys Ser Ile Asp Ala  
 50 55 60

Ile Val Asn Thr His His His Tyr Asp His Ser Gly Gly Asn Leu Ala  
 65 70 75 80

Leu Tyr Ser Ile Leu Cys Gln Glu Asn Ser Gly His Asp Ile Lys Ile  
 85 90 95

Ile Gly Gly Ser Lys Ser Ser Pro Gly Val Thr Glu Val Pro Asp Asn  
 100 105 110

Leu Gln Gln Tyr His Leu Gly Asn Leu Arg Val Thr Cys Ile Arg Thr  
 115 120 125

Pro Cys His Thr Lys Asp Ser Ile Cys Tyr Tyr Ile Lys Asp Leu Glu  
 130 135 140

Thr Gly Glu Gln Cys Ile Phe Thr Gly Asp Thr Leu Phe Ile Ala Gly  
 145 150 155 160

Cys Gly Arg Phe Phe Glu Gly Thr Gly Arg Asp Met Asp Met Ala Leu  
 165 170 175

Asn Gln Ile Met Leu Arg Ala Val Gly Glu Thr Asn Trp Asn Lys Val  
 180 185 190



Lys Ile Tyr Pro Gly His Glu Tyr Thr Lys Gly Asn Val Ser Phe Ile  
195 200 205

Arg Ala Lys Ile Tyr Ser Asp Ile Gly Gln Asn Lys Glu Phe Asp Ala  
210 215 220

Leu Glu Gln Tyr Cys Lys Ser Asn Glu Cys Thr Thr Gly His Phe Thr  
225 230 235 240

Leu Arg Asp Glu Leu Gly Tyr Asn Pro Phe Met Arg Leu Asp Asp Arg  
245 250 255

Ala Val Arg Leu Ala Val Gly Asp Thr Ala Gly Thr Tyr Pro Arg Ser  
260 265 270

Val Val Met Gln Glu Leu Arg Lys Leu Lys Asn Ala Met  
275 280 285

<210> 171  
<211> 329  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 171

Met Leu Arg Ser Thr Val Ser Lys Ala Ser Leu Lys Ile Cys Arg His  
1 5 10 15

Phe His Arg Glu Ser Ile Pro Tyr Asp Lys Thr Ile Lys Asn Leu Leu  
20 25 30

Leu Pro Lys Asp Thr Lys Val Ile Phe Gln Gly Phe Thr Gly Lys Gln  
35 40 45

Gly Thr Phe His Ala Ser Ile Ser Gln Glu Tyr Gly Thr Asn Val Val  
50 55 60

Gly Gly Thr Asn Pro Lys Lys Ala Gly Gln Thr His Leu Gly Gln Pro  
65 70 75 80

Val Phe Ala Ser Val Lys Asp Ala Ile Lys Glu Thr Gly Ala Thr Ala  
85 90 95

Ser Ala Ile Phe Val Pro Pro Pro Ile Ala Ala Ala Ala Ile Lys Glu  
100 105 110

Ser Ile Glu Ala Glu Ile Pro Leu Ala Val Cys Ile Thr Glu Gly Ile  
115 120 125

Pro Gln His Asp Met Leu Tyr Ile Ala Glu Met Leu Gln Thr Gln Asp  
130 135 140

Lys Thr Arg Leu Val Gly Pro Asn Cys Pro Gly Ile Ile Asn Pro Ala  
145 150 155 160

Thr Lys Val Arg Ile Gly Ile Gln Pro Pro Lys Ile Phe Gln Ala Gly  
165 170 175

Lys Ile Gly Ile Ile Ser Arg Ser Gly Thr Leu Thr Tyr Glu Ala Val  
180 185 190

Gln Gln Thr Thr Lys Thr Asp Leu Gly Gln Ser Leu Val Ile Gly Met  
195 200 205

Gly Gly Asp Ala Phe Pro Gly Thr Asp Phe Ile Asp Ala Leu Lys Leu  
210 215 220

Phe Leu Glu Asp Glu Thr Thr Glu Gly Ile Ile Met Leu Gly Glu Ile  
225 230 235 240

Gly Gly Lys Ala Glu Ile Glu Ala Ala Gln Phe Leu Lys Glu Tyr Asn  
245 250 255

Phe Ser Arg Ser Lys Pro Met Pro Val Ala Ser Phe Ile Ala Gly Thr  
260 265 270

Val Ala Gly Gln Met Lys Gly Val Arg Met Gly His Ser Gly Ala Ile  
275 280 285

Val Glu Gly Ser Gly Thr Asp Ala Glu Ser Lys Lys Gln Ala Leu Arg  
290 295 300

Asp Val Gly Val Ala Val Val Glu Ser Pro Gly Tyr Leu Gly Gln Ala  
305 310 315 320

Leu Leu Asp Gln Phe Ala Lys Phe Lys  
325

<210> 172  
<211> 344  
<212> PRT  
<213> *Saccharomyces cerevisiae*

<400> 172

Met Thr Leu Ala Glu Leu Leu Gly Arg Ser Arg Ile Ala Gln Val Ala  
1 5 10 15

Asn Asn His Lys Pro Leu Thr Tyr Thr Gly Lys Lys Phe His Pro Thr  
 20 30  
 His Gln Ile Ile Glu Thr Lys Pro Ser Thr Leu Tyr Arg Gln Glu Trp  
 35 40 45  
 Gly Leu Lys Ser Ala Ile Pro Ser Lys Ile Lys Ser Arg Tyr Leu Val  
 50 55 60  
 Tyr Asn Asp Leu Asp Thr Leu Glu Arg Ile Thr Thr Phe Glu Pro Arg  
 65 70 75 80  
 Gly Gly Thr Gln Trp Asn Arg Leu Arg Phe Gln Glu Met Gly Val Pro  
 85 90 95  
 Ile Val Ser Asn Ile Gly Arg Gln Asn Pro Phe Phe Lys Tyr Ile Ser  
 100 105 110  
 Arg Pro Glu Asp Glu Ser His Ala Lys Leu Ser Leu Phe Lys Glu Met  
 115 120 125  
 Lys Gly Asp Thr Asp Ile Ser Pro Ala Ala Met Lys Lys Arg Leu Lys  
 130 135 140  
 Lys Ile Thr Ala Leu Ile Arg Ser Phe Gln Asp Glu Phe Lys Glu Trp  
 145 150 155 160  
 Leu Val Glu Asn His Pro Asp Glu Leu Lys Leu Asn Ser Asn Lys Leu  
 165 170 175  
 Glu Asp Tyr Val Val Lys Phe Leu Asn Lys Lys Leu Glu Thr Lys Thr  
 180 185 190  
 Asn Lys Lys Phe Asn Thr Glu Ile Ile Gly Thr Gly Gly Leu Ser Tyr  
 195 200 205  
 Ser Leu Pro Gly Lys Leu Lys Asn Ser Pro Asn Gly Val Ile Gln Arg  
 210 215 220  
 Thr Val Val Pro Gly Arg Ile Leu Asn Val Val Lys Glu Asn Asn Asp  
 225 230 235 240  
 Asn Lys Trp Leu Ala Ala Ile Gly Gly Phe Val Ala Asp Val Val Phe  
 245 250 255  
 Phe Gln Ser Pro Pro Ser Ser Phe Asn Ser Met Gly Asp Phe Ile Arg  
 260 265 270

Met Lys Thr Phe Leu Phe Glu Ile Leu Glu Ala Ser Met Glu Lys Asn  
275 280 285

Gly Ser Val Ser Met His Ala Arg Leu Leu Glu Pro Gln Asn Asp Lys  
290 295 300

Thr Arg Glu Phe Phe Asn Lys Arg Pro Ile Tyr Lys Pro Leu Thr Ser  
305 310 315 320

Arg Arg Ala Arg Arg Pro Ser Val Gly Asn Ile Gln Glu Ala Asn Asn  
325 330 335

Leu Leu Asn Ile Ile Lys Gly Asn  
340

<210> 173  
<211> 165  
<212> PRT  
<213> Saccharomyces cerevisiae

<400> 173

Met Leu Pro Val Ile Thr Arg Phe Ala Arg Pro Ala Leu Met Ala Ile  
1 5 10 15

Arg Pro Val Asn Ala Met Gly Val Leu Arg Ala Ser Ser Ile Thr Lys  
20 25 30

Arg Leu Tyr His Pro Lys Val Ile Glu His Tyr Thr His Pro Arg Asn  
35 40 45

Val Gly Ser Leu Asp Lys Lys Leu Pro Asn Val Gly Thr Gly Leu Val  
50 55 60

Gly Ala Pro Ala Cys Gly Asp Val Met Arg Leu Gln Ile Lys Val Asn  
65 70 75 80

Asp Ser Thr Gly Val Ile Glu Asp Val Lys Phe Lys Thr Phe Gly Cys  
85 90 95

Gly Ser Ala Ile Ala Ser Ser Ser Tyr Met Thr Glu Leu Val Gln Gly  
100 105 110

Met Thr Leu Asp Asp Ala Ala Lys Ile Lys Asn Thr Glu Ile Ala Lys  
115 120 125

Glu Leu Ser Leu Pro Pro Val Lys Leu His Cys Ser Met Leu Ala Glu  
130 135 140

Asp Ala Ile Lys Ala Ala Ile Lys Asp Tyr Lys Ser Lys Arg Asn Thr  
Page 312

145 150 155 160

Pro Thr Met Leu Ser  
165

<210> 174  
<211> 172  
<212> PRT  
<213> Saccharomyces cerevisiae  
<400> 174

Met Leu Lys Ile Val Thr Arg Ala Gly His Thr Ala Arg Ile Ser Asn  
1 5 10 15

Ile Ala Ala His Leu Leu Arg Thr Ser Pro Ser Leu Leu Thr Arg Thr  
20 25 30

Thr Thr Thr Thr Arg Phe Leu Pro Phe Ser Thr Ser Ser Phe Leu Asn  
35 40 45

His Gly His Leu Lys Lys Pro Lys Pro Gly Glu Glu Leu Lys Ile Thr  
50 55 60

Phe Ile Leu Lys Asp Gly Ser Gln Lys Thr Tyr Glu Val Cys Glu Gly  
65 70 75 80

Glu Thr Ile Leu Asp Ile Ala Gln Gly His Asn Leu Asp Met Glu Gly  
85 90 95

Ala Cys Gly Gly Ser Cys Ala Cys Ser Thr Cys His Val Ile Val Asp  
100 105 110

Pro Asp Tyr Tyr Asp Ala Leu Pro Glu Pro Glu Asp Asp Glu Asn Asp  
115 120 125

Met Leu Asp Leu Ala Tyr Gly Leu Thr Glu Thr Ser Arg Leu Gly Cys  
130 135 140

Gln Ile Lys Met Ser Lys Asp Ile Asp Gly Ile Arg Val Ala Leu Pro  
145 150 155 160

Gln Met Thr Arg Asn Val Asn Asn Asn Asp Phe Ser  
165 170

<210> 175  
<211> 488  
<212> PRT  
<213> Saccharomyces cerevisiae  
<400> 175

Met Leu Arg Phe Thr Asn Cys Ser Cys Lys Thr Phe Val Lys Ser Ser  
 1 5 10 15  
 Tyr Lys Leu Asn Ile Arg Arg Met Asn Ser Ser Phe Arg Thr Glu Thr  
 20 25 30  
 Asp Ala Phe Gly Glu Ile His Val Pro Ala Asp Lys Tyr Trp Gly Ala  
 35 40 45  
 Gln Thr Gln Arg Ser Phe Gln Asn Phe Lys Ile Gly Gly Ala Arg Glu  
 50 55 60  
 Arg Met Pro Leu Pro Leu Val His Ala Phe Gly Val Leu Lys Lys Ser  
 65 70 75 80  
 Ala Ala Ile Val Asn Glu Ser Leu Gly Gly Leu Asp Pro Lys Ile Ser  
 85 90 95  
 Lys Ala Ile Gln Gln Ala Ala Asp Glu Val Ala Ser Gly Lys Leu Asp  
 100 105 110  
 Asp His Phe Pro Leu Val Val Phe Gln Thr Gly Ser Gly Thr Gln Ser  
 115 120 125  
 Asn Met Asn Ala Asn Glu Val Ile Ser Asn Arg Ala Ile Glu Ile Leu  
 130 135 140  
 Gly Gly Lys Ile Gly Ser Lys Gln Val His Pro Asn Asn His Cys Asn  
 145 150 155 160  
 Gln Ser Gln Ser Ser Asn Asp Thr Phe Pro Thr Val Met His Ile Ala  
 165 170 175  
 Ala Ser Leu Gln Ile Gln Asn Glu Leu Ile Pro Glu Leu Thr Asn Leu  
 180 185 190  
 Lys Asn Ala Leu Glu Ala Lys Ser Lys Glu Phe Asp His Ile Val Lys  
 195 200 205  
 Ile Gly Arg Thr His Leu Gln Asp Ala Thr Pro Leu Thr Leu Gly Gln  
 210 215 220  
 Glu Phe Ser Gly Tyr Val Gln Gln Val Glu Asn Gly Ile Gln Arg Val  
 225 230 235 240  
 Ala His Ser Leu Lys Thr Leu Ser Phe Leu Ala Gln Gly Gly Thr Ala  
 245 250 255

Val Gly Thr Gly Leu Asn Thr Lys Pro Gly Phe Asp Val Lys Ile Ala  
260 265 270

Glu Gln Ile Ser Lys Glu Thr Gly Leu Lys Phe Gln Thr Ala Pro Asn  
275 280 285

Lys Phe Glu Ala Leu Ala Ala His Asp Ala Ile Val Glu Cys Ser Gly  
290 295 300

Ala Leu Asn Thr Leu Ala Cys Ser Leu Phe Lys Ile Ala Gln Asp Ile  
305 310 315 320

Arg Tyr Leu Gly Ser Gly Pro Arg Cys Gly Tyr His Glu Leu Met Leu  
325 330 335

Pro Glu Asn Glu Pro Gly Ser Ser Ile Met Pro Gly Lys Val Asn Pro  
340 345 350

Thr Gln Asn Glu Ala Leu Thr Gln Val Cys Val Gln Val Met Gly Asn  
355 360 365

Asn Ala Ala Ile Thr Phe Ala Gly Ser Gln Gly Gln Phe Glu Leu Asn  
370 375 380

Val Phe Lys Pro Val Met Ile Ala Asn Leu Leu Asn Ser Ile Arg Leu  
385 390 395 400

Ile Thr Asp Ala Ala Tyr Ser Phe Arg Val His Cys Val Glu Gly Ile  
405 410 415

Lys Ala Asn Glu Pro Arg Ile His Glu Leu Leu Thr Lys Ser Leu Met  
420 425 430

Leu Val Thr Ala Leu Asn Pro Lys Ile Gly Tyr Asp Ala Ala Ser Lys  
435 440 445

Val Ala Lys Asn Ala His Lys Lys Gly Ile Thr Leu Lys Glu Ser Ala  
450 455 460

Leu Glu Leu Gly Val Leu Thr Glu Lys Glu Phe Asp Glu Trp Val Val  
465 470 475 480

Pro Glu His Met Leu Gly Pro Lys  
485

<210> 176  
<211> 474  
<212> PRT

<213> Saccharomyces cerevisiae

<400> 176

Met Glu Val Thr Ser Met Phe Leu Asn Arg Met Met Lys Thr Arg Thr  
1 5 10 15  
Gly Leu Tyr Arg Leu Tyr Ser Thr Leu Lys Val Pro His Val Glu Ile  
20 25 30  
Asn Gly Ile Lys Tyr Lys Thr Asp Pro Gln Thr Thr Asn Val Thr Asp  
35 40 45  
Ser Ile Ile Lys Leu Thr Asp Arg Ser Leu His Leu Lys Glu Ser His  
50 55 60  
Pro Val Gly Ile Leu Arg Asp Leu Ile Glu Lys Lys Leu Asn Ser Val  
65 70 75 80  
Asp Asn Thr Phe Lys Ile Phe Asn Asn Phe Lys Pro Val Val Thr Thr  
85 90 95  
Met Glu Asn Phe Asp Ser Leu Gly Phe Pro Lys Asp His Pro Gly Arg  
100 105 110  
Ser Lys Ser Asp Thr Tyr Tyr Ile Asn Glu Thr His Leu Leu Arg Thr  
115 120 125  
His Thr Ser Ala His Glu Leu Glu Cys Phe Gln Lys Ile Arg Asn Asp  
130 135 140  
Ser Asp Asn Ile Lys Ser Gly Phe Leu Ile Ser Ala Asp Val Tyr Arg  
145 150 155 160  
Arg Asp Glu Ile Asp Lys Thr His Tyr Pro Val Phe His Gln Met Glu  
165 170 175  
Gly Ala Thr Ile Trp Lys Arg Thr Lys Ala Asp Val Gly Val Lys Glu  
180 185 190  
Pro Met Tyr Ile Glu Lys Ile Arg Glu Asp Ile Arg Gln Val Glu Asn  
195 200 205  
Leu Leu Asn Lys Glu Asn Val Lys Ile Thr Val Asp Asp Asp Thr Ile  
210 215 220  
Pro Leu Lys Glu Asn Asn Pro Lys Gln Glu Tyr Met Ser Asp Leu Glu  
225 230 235 240



Val Asp Leu Cys Ser Gln His Leu Lys Arg Ser Ile Glu Leu Ile Val  
 245 250 255  
 Ser Glu Val Phe Asn Lys Lys Ile Ser Ser Met Ile Lys Asn Lys Ala  
 260 265 270  
 Asn Asn Thr Pro Lys Glu Leu Lys Val Arg Trp Ile Asn Ala Tyr Phe  
 275 280 285  
 Pro Trp Thr Ala Pro Ser Trp Glu Ile Glu Val Trp Trp Gln Gly Glu  
 290 295 300  
 Trp Leu Glu Leu Cys Gly Cys Gly Leu Ile Arg Gln Asp Val Leu Leu  
 305 310 315 320  
 Arg Ala Gly Tyr Lys Pro Ser Glu Thr Ile Gly Trp Ala Phe Gly Leu  
 325 330 335  
 Gly Leu Asp Arg Ile Ala Met Leu Leu Phe Glu Ile Pro Asp Ile Arg  
 340 345 350  
 Leu Leu Trp Ser Arg Asp Glu Arg Phe Ser Arg Gln Phe Ser Lys Gly  
 355 360 365  
 Leu Ile Thr Ser Phe Lys Pro Tyr Ser Lys His Pro Gly Ser Phe Arg  
 370 375 380  
 Asp Val Ala Phe Trp Leu Pro Glu Asp Lys Pro Asp Ile His Gln Val  
 385 390 395 400  
 His Glu Asn Asp Leu Met Glu Ile Ile Arg Asn Ile Ala Gly Asp Leu  
 405 410 415  
 Val Glu Ser Val Lys Leu Val Asp Ser Phe Thr His Pro Lys Thr Gly  
 420 425 430  
 Arg Lys Ser Met Cys Tyr Arg Ile Asn Tyr Gln Ser Met Asp Arg Asn  
 435 440 445  
 Leu Thr Asn Ala Glu Val Asn Thr Leu Gln Asp Met Val Cys Ser Lys  
 450 455 460  
 Leu Val Lys Glu Tyr Ser Val Glu Leu Arg  
 465 470

<210> 177

<211> 185

<212> PRT

<213> Saccharomyces cerevisiae

<400> 177

Met Gln Ala Lys Leu Leu Phe Thr Arg Leu Asn Phe Arg Arg Pro Ser  
1 5 10 15

Thr Thr Leu Arg Gln Phe Pro Leu Thr Cys Phe Leu Phe His Ser Lys  
20 25 30

Ala Phe Tyr Ser Asp Leu Val Thr Lys Glu Pro Leu Ile Thr Pro Lys  
35 40 45

Arg Ile Ile Asn Lys Thr Pro Gly Leu Asn Leu Ser Ile Ser Glu Arg  
50 55 60

Ala Ser Asn Arg Leu Ala Glu Ile Tyr Arg Asn Ser Lys Glu Asn Leu  
65 70 75 80

Arg Ile Ser Val Glu Ser Gly Gly Cys His Gly Phe Gln Tyr Asn Leu  
85 90 95

Thr Leu Glu Pro Ala Thr Lys Pro Asp Ile Lys Asn Asp Val Lys Asp  
100 105 110

Lys Glu Phe Ser Asp Asp Leu Asp Asp Asp Asp Ser Lys Asp Ile Ile  
115 120 125

Tyr Val Leu Pro Glu Asp Lys Gly Arg Val Ile Ile Asp Ser Lys Ser  
130 135 140

Leu Asn Ile Leu Asn Asn Thr Thr Leu Thr Tyr Thr Asn Glu Leu Ile  
145 150 155 160

Gly Ser Ser Phe Lys Ile Ile Asn Gly Ser Leu Lys Ser Ser Cys Gly  
165 170 175

Cys Gly Ser Ser Phe Asp Ile Glu Asn  
180 185

<210> 178

<211> 750

<212> DNA

<213> Glycine max

<400> 178

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taatcaaaaa	tattctaata	actaataata	aaaaggaaaa	taaagattca	ttagaatatt	120
ataaaataac	aaataataga	acaaaacaag	attcttttagt	tatatatgta	aaacaaaaat	180
ggtttattta	taagaataca	tattccattc	tatatcaaaa	caaaatataa	aaatttgga	240

tagattctat gaaatctcaa aaaatcccg	tattcaatta ttcattaaac atatgaatat	300
tagtgcatat tattttatcg attagattaa	atagattatc tatatatata gatagatatc	360
tatttgaatt gcttcattcg cgaggagccg	tatgaggtga aaatctcatg tacggttctg	420
taataaagat ggaattgaga aacaaccatc	aattataacc cccaaagaac cagatttcgt	480
aaacaacata gaggaagaat gaaaggaata	tcctatcgag ggaatcatat ttgcttcgga	540
agatatgctc ttcaagcact tgagccagct	tggataacat ctagacaaat agaagcggga	600
cggcgggcaa tgtcacgaaa tgttcgccga	ggtggacaaa tatgggtacg catatttcca	660
gacaaaccgg ttacagtaag acctactgaa	acacgtatgg gttcaggaag aggttctccc	720
gaatattggg tagctgtcgt taaacctggg		750

<210> 179  
 <211> 552  
 <212> PRT  
 <213> Pisum sativum

<400> 179

Met	Asn	Gln	Ala	Met	Ala	Thr	Pro	Leu	Ser	Leu	Ser	Cys	Cys	Ser	Pro
1				5					10					15	

Thr	Leu	Thr	Arg	Ser	Thr	Leu	Phe	Phe	Thr	Lys	Thr	Phe	Pro	Phe	Ser
			20					25					30		

Arg	Ser	Phe	Ser	Thr	Pro	Leu	Pro	Leu	Ser	Thr	Lys	Thr	Leu	Ile	Ser
		35					40					45			

Leu	Ser	Pro	Pro	His	Arg	Thr	Phe	Ala	Val	Arg	Ala	Glu	Ser	Gln	Asn
50						55				60					

Gly	Ala	Asp	Pro	Ala	Arg	Gln	Tyr	Asp	Phe	Asp	Leu	Phe	Thr	Ile	Gly
65					70			75							80

Ala	Gly	Ser	Gly	Gly	Val	Arg	Ala	Ser	Arg	Phe	Ala	Ser	Asn	Phe	Gly
			85					90						95	

Ala	Ser	Ser	Ala	Val	Cys	Glu	Leu	Pro	Phe	Ser	Thr	Ile	Ser	Ser	Asp
			100					105					110		

Thr	Thr	Gly	Gly	Val	Gly	Gly	Thr	Cys	Val	Ile	Arg	Gly	Cys	Val	Pro
		115					120					125			

Lys	Lys	Leu	Leu	Val	Tyr	Ala	Ser	Lys	Phe	Ser	His	Glu	Phe	Glu	Glu
130						135					140				

Ser	Asn	Gly	Phe	Gly	Trp	Arg	Tyr	Asp	Ser	Glu	Pro	Lys	His	Asp	Trp
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Page 319

145		150		155		160
Ser Ser Leu Ile	Ala 165	Asn Lys Asn Ala	Glu 170	Leu Gln Arg Leu	Thr 175	Gly
Ile Tyr Lys	Asn 180	Thr Leu Lys Asn	Ala 185	Gly Val Lys Leu	Ile 190	Glu Gly
Arg Gly	Lys 195	Ile Val Asp Ala	His 200	Thr Val Asp Val	Asp 205	Gly Lys Leu
Tyr Ser	Ala 210	Lys His Ile	Leu 215	Val Ser Val Gly	Gly 220	Arg Pro Phe Ile
Pro 225	Asp Ile Pro	Gly Lys 230	Glu Tyr Ala Ile	Asp 235	Ser Asp Ala Ala	Leu 240
Asp Leu Pro Ser	Lys 245	Pro Gln Lys Ile	Ala 250	Ile Val Gly Gly	Gly 255	Tyr
Ile Ala Leu	Glu 260	Phe Ala Gly Ile	Phe 265	Asn Gly Leu Lys	Ser 270	Glu Val
His Val	Phe 275	Ile Arg Gln Lys	Lys 280	Val Leu Arg Gly	Phe 285	Asp Glu Glu
Ile Arg	Asp 290	Phe Val Ala	Glu 295	Asn Met Ala Leu	Arg 300	Gly Ile Glu Phe
His 305	Thr Glu Glu Ser	Pro 310	Val Ala Ile Thr	Lys 315	Ala Ala Asp Gly	Ser 320
Leu Ser Leu Lys	Thr 325	Asn Lys Gly Thr	Glu 330	Glu Gly Phe Ser	His 335	Ile
Met Phe Ala	Thr 340	Gly Arg Ser Pro	Asn 345	Thr Lys Asp Leu	Gly 350	Leu Glu
Ser Val	Gly 355	Val Lys Val Ala	Lys 360	Asp Gly Ser Ile	Glu 365	Val Asp Glu
Tyr Ser	Gln 370	Thr Ser Val	Pro 375	Ser Ile Trp Ala	Ile 380	Gly Asp Ala Thr
Asn 385	Arg Val Asn Leu	Thr 390	Pro Val Ala Leu	Met 395	Glu Gly Val Ala	Leu 400
Ala Lys Thr Leu Phe	Gln Asn Glu Pro	Thr Lys Pro Asp Tyr	Arg Ala			

405

410

415

Ile Pro Ser Ala Val Phe Ser Gln Pro Pro Ile Gly Gly Val Gly Leu  
 420 425 430

Thr Glu Glu Gln Ala Ala Glu Gln Tyr Gly Asp Ile Asp Val Phe Thr  
 435 440 445

Ala Asn Phe Arg Pro Met Lys Ala Thr Leu Ser Gly Leu Pro Asp Arg  
 450 455 460

Val Phe Met Lys Leu Ile Val Ser Ala Glu Thr Asn Val Val Leu Gly  
 465 470 475 480

Leu His Met Cys Gly Glu Asp Ala Ala Glu Ile Ala Gln Gly Phe Ala  
 485 490 495

Val Gly Ile Lys Ala Gly Leu Thr Lys Ala Asp Phe Asp Ala Thr Val  
 500 505 510

Gly Ile His Pro Thr Ala Ala Glu Glu Phe Val Thr Met Arg Thr Pro  
 515 520 525

Thr Arg Lys Val Arg Lys Asn Gln Ala Ser Gln Gly Lys Ser Asp Ser  
 530 535 540

Lys Ala Lys Ala Val Ala Gly Ser  
 545 550

<210> 180  
 <211> 735  
 <212> PRT  
 <213> Chlamydomonas reinhardtii

<400> 180

Met Ala Ala Thr Tyr Ser Leu Ala Thr Ser Pro Leu Thr Arg Ser Thr  
 1 5 10 15

Pro Ile Pro Phe Ser Thr Lys Arg Val Pro Ser Gly Arg Ser Ser Gly  
 20 25 30

Ala Leu Pro Val Pro Gly Ser Gln Ala Arg Leu Ser Gly Ala Gly Ala  
 35 40 45

Val Ala Leu Asp Gly Leu Glu Gly Gly Arg Asp Asp Trp His Gln Arg  
 50 55 60

Tyr Ser Leu Ser Thr Ser Gly Arg Arg Arg Ser Val Ala Ser Gly Ala  
 65 70 75 80

Pro Ser Asn Thr Gly Ser Ser Glu Ala Lys Asn Val Val Met Ala Ser  
 85 90 95  
 Trp Asn Val Thr Val Gly Phe Ser Val Gly Ala Ser Ser Ser Ala Phe  
 100 105 110  
 Ser Asp Ala Ser Ser Phe Ser Phe Pro Ala Arg Ser Ala Pro Ala Gly  
 115 120 125  
 Pro Val Ala Arg Pro Pro Arg Thr Gly Val Ser Leu Leu Ser Arg Ala  
 130 135 140  
 Leu Ser Thr Gly Glu Lys Glu Gln Asp Leu Leu Ala His Leu Pro Pro  
 145 150 155 160  
 Val Leu Pro Ser Thr Asp Ala Ala Asp Pro Leu Leu Phe Phe Pro Gly  
 165 170 175  
 Ile Pro Leu Glu Leu Leu Arg Glu Ala Gln Ala Glu Phe Pro Ile Phe  
 180 185 190  
 Asn Asn Glu Leu Leu Val His Ala Tyr Gly Leu Ala Ala Arg Ala His  
 195 200 205  
 Gln Asn Gln Gln Arg Lys Asn Gly Glu Ser Leu Leu Ser His Cys Val  
 210 215 220  
 Ala Val Ala Lys Thr Val Ala Gly Leu Gly Leu Asp Ala Glu Thr Val  
 225 230 235 240  
 Ala Ala Ala Leu Leu His Glu Cys Val Asp Met Val Ser Arg Ser Gln  
 245 250 255  
 Leu Glu Glu Phe Met Pro Pro Ser Val Val Ser Val Leu Glu His Val  
 260 265 270  
 Asn Thr Ile Ser Glu Met Ser Arg Leu Tyr Arg Gln His Ser Ala Thr  
 275 280 285  
 Gly Ser Phe Ser Asp Glu Thr Phe Gln Arg Leu Leu Val Gly Phe Glu  
 290 295 300  
 Asp Val Lys Ala Val Ile Val Lys Leu Ser Asp Arg Leu Ala Glu Leu  
 305 310 315 320  
 Arg Thr Ile Ser Val Leu Pro Ala Asp Arg Gln Ala Ala Leu Ala Arg  
 325 330 335

Glu Thr Leu Glu Val Tyr Ser Val Val Ala Asp Arg Leu Gly Val Trp  
 340 345 350  
 Cys Leu Lys Ala Glu Leu Glu Asp Leu Ala Phe Ser Val Leu His Pro  
 355 360 365  
 Gln Glu Tyr Asn Trp Leu Lys Glu Ala Val Arg Thr Arg Gln Asp Pro  
 370 375 380  
 Val Ala Leu Glu Thr Ala Ile Asn Ser Ile Lys Gly Ala Leu Gln Ala  
 385 390 395 400  
 Gln Gly Val Ala Tyr Glu Asp Ile Ser Gly Arg Pro Lys Asn Leu Tyr  
 405 410 415  
 Gly Ile Phe Met Lys Leu Gln Lys Asp Gly Lys Pro Leu Thr Ile Glu  
 420 425 430  
 Ser Leu Asn Ser Leu Tyr Asp Leu Met Ala Leu Arg Val Val Val Ala  
 435 440 445  
 His Lys His Glu Cys Tyr Thr Ala Leu Arg Ala Val Gln Ser Val Tyr  
 450 455 460  
 Arg Val Met Pro Ser Arg Ser Lys Asp Phe Ile Lys Asp Ile Lys Lys  
 465 470 475 480  
 Pro Asn Gly Tyr Gln Ser Leu His Glu Thr Val Tyr Gly Glu Gly Asp  
 485 490 495  
 Val Pro Val Glu Val Gln Ile Arg Thr His Lys Met His Tyr Ile Ala  
 500 505 510  
 Glu Tyr Gly Phe Ala Ala His Trp Lys Tyr Lys Glu Gln Met Asp Ser  
 515 520 525  
 Glu Asp Glu Trp Leu Glu Lys Glu Thr Gln Tyr Lys Arg Trp Leu Thr  
 530 535 540  
 Gln Tyr Lys Leu Arg Val His Asp Lys Lys Val Arg Pro Gln Gly Ser  
 545 550 555 560  
 Pro Pro Thr Asp Ser Ser Leu Lys Ser Leu Gly Val Ala Tyr Met Asp  
 565 570 575  
 Met Pro Glu Glu Gln Gln Arg Gly Leu Leu Asp Pro Phe Leu Gln His  
 580 585 590

Glu Arg Phe Lys Leu Gln Val Pro Ala Lys Thr Glu Val Ser Val Leu  
595 600 605

Leu Gln Thr Cys Asp Gly Ile Glu Thr Lys Asp Phe Pro Leu Gly Thr  
610 615 620

Thr Ala Asn Gln Leu Trp Arg Asp Leu Gly Leu Gly Ala Gln Pro Gly  
625 630 635 640

Tyr Ala Leu Thr Val Asn Ser Arg Leu Pro Ser Gly Glu Ala Ala Leu  
645 650 655

Gln Ser Gly Asp Leu Val Gln Val Leu Pro Leu Ser Thr Ile Leu Ser  
660 665 670

Arg Ser Pro Pro Gln Ser Ala Pro Leu Ala Ala Val Leu Glu Asp Trp  
675 680 685

Glu Glu Glu Gln Ala His Ala Ala Ala Glu Ala Ala Ala Leu Ala Ala  
690 695 700

Ser Ala Asn Asn Tyr Leu Glu Val Tyr Ser Arg Asp Gly Met Thr Thr  
705 710 715 720

Trp Ser Met Gly Pro Asn Ala Gly Ala Ala Val Pro Ala Gly Met  
725 730 735

<210> 181  
<211> 260  
<212> PRT  
<213> Pisum sativum

<400> 181

Met Ala Ala Ala His Thr Pro Arg Glu Glu Asn Val Tyr Met Ala Lys  
1 5 10 15

Leu Ala Glu Gln Ala Glu Arg Tyr Glu Glu Met Val Glu Phe Met Glu  
20 25 30

Lys Val Ser Ala Asn Ala Asp Ser Glu Glu Leu Thr Val Glu Glu Arg  
35 40 45

Asn Leu Leu Ser Val Ala Tyr Lys Asn Val Ile Gly Ala Arg Arg Ala  
50 55 60

Ser Trp Arg Ile Ile Ser Ser Ile Glu Gln Lys Glu Glu Ser Arg Gly  
65 70 75 80



Asn Glu Asp His Val Asp Val Ile Arg Asp Val Arg Ser Lys Ile Glu  
85 90 95

Ser Glu Leu Ser Asn Ile Cys Asp Gly Ile Leu Lys Leu Leu Asp Thr  
100 105 110

Arg Leu Ile Pro Ser Ala Ser Ser Gly Asp Ser Lys Val Phe Tyr Leu  
115 120 125

Lys Met Lys Gly Asp Tyr His Arg Tyr Leu Ala Glu Phe Lys Thr Gly  
130 135 140

Ala Glu Arg Lys Glu Ala Ala Glu Ser Thr Leu Ala Ala Tyr Lys Ser  
145 150 155 160

Ala Gln Asp Ile Ala Asn Ala Glu Leu Pro Pro Thr His Pro Ile Arg  
165 170 175

Leu Gly Leu Ala Leu Asn Phe Ser Val Phe Tyr Tyr Glu Ile Leu Asn  
180 185 190

Ser Pro Asp Arg Ala Cys Asn Leu Ala Lys Gln Ala Phe Asp Glu Ala  
195 200 205

Ile Ala Glu Leu Asp Thr Leu Gly Glu Glu Ser Tyr Lys Asp Ser Thr  
210 215 220

Leu Ile Met Gln Leu Leu Arg Asp Asn Leu Thr Leu Trp Thr Ser Asp  
225 230 235 240

Met Gln Asp Asp Gly Ala Asp Glu Ile Lys Glu His Ala Pro Lys Ala  
245 250 255

Asp Glu Gln Gln  
260

<210> 182

<211> 564

<212> PRT

<213> Arabidopsis thaliana

<400> 182

Met Glu Ala Leu Gln Phe Ser Ser Val Asn Arg Val Pro Cys Thr Leu  
1 5 10 15

Ser Cys Thr Gly Asn Arg Arg Ile Lys Ala Ala Phe Ser Ser Ala Phe  
20 25 30

Thr Gly Gly Thr Ile Asn Ser Ala Ser Leu Ser Ser Ser Arg Asn Leu  
 35 40 45  
 Ser Thr Arg Glu Ile Trp Ser Trp Val Lys Ser Lys Thr Val Val Gly  
 50 55 60  
 His Gly Arg Tyr Arg Arg Ser Gln Val Arg Ala Val Met Phe Gly Gln  
 65 70 75 80  
 Leu Thr Gly Gly Leu Glu Ala Ala Trp Ser Lys Leu Lys Gly Glu Glu  
 85 90 95  
 Val Leu Thr Lys Asp Asn Ile Ala Glu Pro Met Arg Asp Ile Arg Arg  
 100 105 110  
 Ala Leu Leu Glu Ala Asp Val Ser Leu Pro Val Val Arg Arg Phe Val  
 115 120 125  
 Gln Ser Val Ser Asp Gln Ala Val Gly Met Gly Val Ile Arg Gly Val  
 130 135 140  
 Lys Pro Asp Gln Gln Leu Val Lys Ile Val His Asp Glu Leu Val Lys  
 145 150 155 160  
 Leu Met Gly Gly Glu Val Ser Glu Leu Gln Phe Ala Lys Ser Gly Pro  
 165 170 175  
 Thr Val Ile Leu Leu Ala Gly Leu Gln Gly Val Gly Lys Thr Thr Val  
 180 185 190  
 Cys Ala Lys Leu Ala Cys Tyr Leu Lys Lys Gln Gly Lys Ser Cys Met  
 195 200 205  
 Leu Ile Ala Gly Asp Val Tyr Arg Pro Ala Ala Ile Asp Gln Leu Val  
 210 215 220  
 Ile Leu Gly Glu Gln Val Gly Val Pro Val Tyr Thr Ala Gly Thr Asp  
 225 230 235 240  
 Val Lys Pro Ala Asp Ile Ala Lys Gln Gly Leu Lys Glu Ala Lys Lys  
 245 250 255  
 Asn Asn Val Asp Val Val Ile Met Asp Thr Ala Gly Arg Leu Gln Ile  
 260 265 270  
 Asp Lys Gly Met Met Asp Glu Leu Lys Asp Val Lys Lys Phe Leu Asn  
 275 280 285

Pro Thr Glu Val Leu Leu Val Val Asp Ala Met Thr Gly Gln Glu Ala  
 290 295 300  
 Ala Ala Leu Val Thr Thr Phe Asn Val Glu Ile Gly Ile Thr Gly Ala  
 305 310 315 320  
 Ile Leu Thr Lys Leu Asp Gly Asp Ser Arg Gly Gly Ala Ala Leu Ser  
 325 330 335  
 Val Lys Glu Val Ser Gly Lys Pro Ile Lys Leu Val Gly Arg Gly Glu  
 340 345 350  
 Arg Met Glu Asp Leu Glu Pro Phe Tyr Pro Asp Arg Met Ala Gly Arg  
 355 360 365  
 Ile Leu Gly Met Gly Asp Val Leu Ser Phe Val Glu Lys Ala Thr Glu  
 370 375 380  
 Val Met Arg Gln Glu Asp Ala Glu Asp Leu Gln Lys Lys Ile Met Ser  
 385 390 395 400  
 Ala Lys Phe Asp Phe Asn Asp Phe Leu Lys Gln Thr Arg Ala Val Ala  
 405 410 415  
 Lys Met Gly Ser Met Thr Arg Val Leu Gly Met Ile Pro Gly Met Gly  
 420 425 430  
 Lys Val Ser Pro Ala Gln Ile Arg Glu Ala Glu Lys Asn Leu Leu Val  
 435 440 445  
 Met Glu Ala Met Ile Glu Val Met Thr Pro Glu Glu Arg Glu Arg Pro  
 450 455 460  
 Glu Leu Leu Ala Glu Ser Pro Glu Arg Arg Lys Arg Ile Ala Lys Asp  
 465 470 475 480  
 Ser Gly Lys Thr Glu Gln Gln Val Ser Ala Leu Val Ala Gln Ile Phe  
 485 490 495  
 Gln Met Arg Val Lys Met Lys Asn Leu Met Gly Val Met Glu Gly Gly  
 500 505 510  
 Ser Ile Pro Ala Leu Ser Gly Leu Glu Asp Ala Leu Lys Ala Glu Gln  
 515 520 525  
 Lys Ala Pro Pro Gly Thr Ala Arg Arg Lys Arg Lys Ala Asp Ser Arg  
 530 535 540

Lys Lys Phe Val Glu Ser Ala Ser Ser Lys Pro Gly Pro Arg Gly Phe  
 545 550 555 560

Gly Ser Gly Asn

<210> 183  
 <211> 525  
 <212> PRT  
 <213> PISUM SATIVUM

<220>  
 <221> MISC\_FEATURE  
 <222> (181)..(181)  
 <223> Xaa can be any naturally occurring amino acid

<400> 183

Glu Phe Gly Thr Arg Asn Ser Phe Ala Arg Glu Ile Trp Gly Leu Val  
 1 5 10 15

Gln Ser Lys Ser Leu Thr Ser Arg Arg Thr Asp Met Ile Arg Pro Val  
 20 25 30

Val Val Arg Ala Glu Met Phe Gly Gln Leu Thr Ser Gly Leu Glu Ser  
 35 40 45

Ala Trp Asn Lys Leu Lys Arg Glu Glu Val Leu Thr Lys Glu Asn Ile  
 50 55 60

Val Glu Pro Met Arg Asp Ile Arg Arg Ala Arg Ala Asp Val Ser Leu  
 65 70 75 80

Pro Val Val Arg Arg Phe Val Gln Ser Val Thr Asp Lys Ala Val Gly  
 85 90 95

Val Gly Val Thr Arg Gly Val Lys Pro Asp Gln Gln Leu Val Lys Ile  
 100 105 110

Val His Asp Glu Leu Val Gln Leu Met Gly Gly Glu Val Ser Glu Leu  
 115 120 125

Thr Phe Ala Asn Ser Gly Pro Thr Val Ile Leu Leu Ala Gly Leu Gln  
 130 135 140

Gly Val Gly Lys Thr Thr Val Cys Ala Lys Leu Ala Thr Tyr Phe Lys  
 145 150 155 160

Lys Gln Gly Lys Ser Cys Met Leu Val Ala Gly Asp Val Tyr Arg Pro  
 165 170 175

Ala Ala Ile Asp Xaa Leu Thr Ile Leu Gly Lys Gln Val Asp Val Pro  
 180 185 190  
 Val Tyr Ala Ala Gly Thr Asp Val Lys Pro Ser Val Ile Ala Lys Gln  
 195 200 205  
 Gly Phe Glu Glu Ala Lys Lys Lys Lys Ile Asp Val Val Ile Val Asp  
 210 215 220  
 Thr Ala Gly Ser Leu Gln Ile Asp Lys Ala Met Met Asp Glu Leu Lys  
 225 230 235 240  
 Glu Val Lys Gln Val Leu Asn Pro Thr Glu Val Leu Leu Val Val Asp  
 245 250 255  
 Ala Met Thr Gly Gln Glu Ala Ala Ala Leu Val Thr Thr Phe Asn Leu  
 260 265 270  
 Glu Ile Gly Ile Thr Gly Ala Ile Leu Thr Lys Leu Asp Gly Asp Ser  
 275 280 285  
 Arg Gly Gly Ala Ala Leu Ser Val Lys Glu Val Ser Gly Lys Pro Ile  
 290 295 300  
 Lys Leu Val Gly Arg Gly Glu Arg Met Glu Asp Leu Glu Pro Phe Tyr  
 305 310 315 320  
 Pro Asp Arg Met Ala Gly Arg Ile Leu Gly Met Gly Asp Val Leu Ser  
 325 330 335  
 Phe Val Glu Lys Ala Gln Glu Val Met Leu Glu Glu Asp Ala Glu Asp  
 340 345 350  
 Met Gln Lys Lys Ile Met Ser Ala Lys Phe Asp Phe Asn Asp Leu Leu  
 355 360 365  
 Lys Gln Thr Arg Thr Val Ala Lys Met Gly Ser Val Ser Arg Val Leu  
 370 375 380  
 Gly Met Ile Pro Gly Met Ala Lys Val Thr Pro Ala Gln Ile Arg Glu  
 385 390 395 400  
 Ala Glu Lys Asn Leu Gln Phe Met Glu Val Ile Ile Glu Ala Met Thr  
 405 410 415  
 Pro Glu Glu Arg Gly Lys Pro Glu Leu Leu Ala Glu Phe Pro Val Arg  
 420 425 430

Arg Lys Ser Val Ala Gln Glu Ser Gly Lys Thr Glu Gln Gln Val Ser  
435 440 445

Gln Leu Val Ala Gln Leu Phe Gln Met Arg Val Arg Met Lys Lys Leu  
450 455 460

Met Gly Val Met Glu Gly Gly Ser Met Pro Thr Leu Ser Asn Leu Glu  
465 470 475 480

Glu Ala Leu Lys Ala Asn Lys Lys Ala Pro Pro Gly Thr Ala Arg Arg  
485 490 495

Lys Lys Lys Gly Gly Leu Lys Arg Leu Phe Lys Gly Arg Ser Ser Lys  
500 505 510

Ile Ser Leu Pro Ala Pro Arg Gly Phe Gly Ser Lys Asn  
515 520 525

<210> 184  
<211> 376  
<212> PRT  
<213> Arabidopsis thaliana

<400> 184

Met Gln Lys Val Phe Leu Ala Met Asp Thr Cys Ala Leu Val Ile His  
1 5 10 15

Gln Ser Leu Ser Arg Ile Lys Leu Ser Pro Pro Lys Ser Ser Ser Ser  
20 25 30

Ser Ser Ser Ser Ser Ser Ala Phe Ser Pro Glu Ser Leu Pro Ile Arg  
35 40 45

Arg Ile Glu Leu Cys Phe Arg Gly Ala Ile Cys Ala Ala Val Gln Arg  
50 55 60

Asn Tyr Glu Glu Thr Thr Ser Ser Val Glu Glu Ala Glu Glu Asp Asp  
65 70 75 80

Glu Ser Ser Ser Ser Tyr Gly Glu Val Asn Lys Ile Ile Gly Ser Arg  
85 90 95

Thr Ala Gly Glu Gly Ala Met Glu Tyr Leu Ile Glu Trp Lys Asp Gly  
100 105 110

His Ser Pro Ser Trp Val Pro Ser Ser Tyr Ile Ala Ala Asp Val Val  
115 120 125

Ser Glu Tyr Glu Thr Pro Trp Trp Thr Ala Ala Lys Lys Ala Asp Glu  
 130 135 140

Gln Ala Leu Ser Gln Leu Leu Glu Asp Arg Asp Val Asp Ala Val Asp  
 145 150 155 160

Glu Asn Gly Arg Thr Ala Leu Leu Phe Val Ala Gly Leu Gly Ser Asp  
 165 170 175

Lys Cys Val Arg Leu Leu Ala Glu Ala Gly Ala Asp Leu Asp His Arg  
 180 185 190

Asp Met Arg Gly Gly Leu Thr Ala Leu His Met Ala Ala Gly Tyr Val  
 195 200 205

Arg Pro Glu Val Val Glu Ala Leu Val Glu Leu Gly Ala Asp Ile Glu  
 210 215 220

Val Glu Asp Glu Arg Gly Leu Thr Ala Leu Glu Leu Ala Arg Glu Ile  
 225 230 235 240

Leu Lys Thr Thr Pro Lys Gly Asn Pro Met Gln Phe Gly Arg Arg Ile  
 245 250 255

Gly Leu Glu Lys Val Ile Asn Val Leu Glu Gly Gln Val Phe Glu Tyr  
 260 265 270

Ala Glu Val Asp Glu Ile Val Glu Lys Arg Gly Lys Gly Lys Asp Val  
 275 280 285

Glu Tyr Leu Val Arg Trp Lys Asp Gly Gly Asp Cys Glu Trp Val Lys  
 290 295 300

Gly Val His Val Ala Glu Asp Val Ala Lys Asp Tyr Glu Asp Gly Leu  
 305 310 315 320

Glu Tyr Ala Val Ala Glu Ser Val Ile Gly Lys Arg Val Gly Asp Asp  
 325 330 335

Gly Lys Thr Ile Glu Tyr Leu Val Lys Trp Thr Asp Met Ser Asp Ala  
 340 345 350

Thr Trp Glu Pro Gln Asp Asn Val Asp Ser Thr Leu Val Leu Leu Tyr  
 355 360 365

Gln Gln Gln Gln Pro Met Asn Glu  
 370 375

<210> 185  
 <211> 364  
 <212> PRT  
 <213> Spinacia oleracea

<400> 185

Met Ala Cys Ser Leu Ser Phe Ser Ser Ser Val Ser Thr Phe His Leu  
 1 5 10 15

Pro Thr Thr Thr Gln Ser Thr Gln Ala Pro Pro Asn Asn Ala Thr Thr  
 20 25 30

Leu Pro Thr Thr Asn Pro Ile Gln Cys Ala Asn Leu Arg Glu Leu Arg  
 35 40 45

Asp Arg Ile Gly Ser Val Lys Asn Thr Gln Lys Ile Thr Glu Ala Met  
 50 55 60

Lys Leu Val Ala Ala Ala Lys Val Arg Arg Ala Gln Glu Ala Val Val  
 65 70 75 80

Asn Gly Arg Pro Phe Ser Glu Thr Leu Val Glu Val Leu Tyr Asn Met  
 85 90 95

Asn Glu Gln Leu Gln Thr Glu Asp Val Asp Val Pro Leu Thr Lys Ile  
 100 105 110

Arg Thr Val Lys Lys Val Ala Leu Met Val Val Thr Gly Asp Arg Gly  
 115 120 125

Leu Cys Gly Gly Phe Asn Asn Met Leu Leu Lys Lys Ala Glu Ser Arg  
 130 135 140

Ile Ala Glu Leu Lys Lys Leu Gly Val Asp Tyr Thr Ile Ile Ser Ile  
 145 150 155 160

Gly Lys Lys Gly Asn Thr Tyr Phe Ile Arg Arg Pro Glu Ile Pro Val  
 165 170 175

Asp Arg Tyr Phe Asp Gly Thr Asn Leu Pro Thr Ala Lys Glu Ala Gln  
 180 185 190

Ala Ile Ala Asp Asp Val Phe Ser Leu Phe Val Ser Glu Glu Val Asp  
 195 200 205

Lys Val Glu Met Leu Tyr Thr Lys Phe Val Ser Leu Val Lys Ser Asp  
 210 215 220

Pro Val Ile His Thr Leu Leu Pro Leu Ser Pro Lys Gly Glu Ile Cys



225                      230                      235                      240  
 Asp Ile Asn Gly Lys Cys Val Asp Ala Ala Glu Asp Glu Leu Phe Arg  
                                  245                                   250                                   255  
 Leu Thr Thr Lys Glu Gly Lys Leu Thr Val Glu Arg Asp Met Ile Lys  
                                  260                                   265                                   270  
 Thr Glu Thr Pro Ala Phe Ser Pro Ile Leu Glu Phe Glu Gln Asp Pro  
                                  275                                   280                                   285  
 Ala Gln Ile Leu Asp Ala Leu Leu Pro Leu Tyr Leu Asn Ser Gln Ile  
                                  290                                   295                                   300  
 Leu Arg Ala Leu Gln Glu Ser Leu Ala Ser Glu Leu Ala Ala Arg Met  
 305                                   310                                   315                                   320  
 Thr Ala Met Ser Asn Ala Thr Asp Asn Ala Asn Glu Leu Lys Lys Thr  
                                  325                                   330                                   335  
 Leu Ser Ile Asn Tyr Asn Arg Ala Arg Gln Ala Lys Ile Thr Gly Glu  
                                  340                                   345                                   350  
 Ile Leu Glu Ile Val Ala Gly Ala Asn Ala Cys Val  
                                  355                                   360

<210> 186  
 <211> 147  
 <212> PRT  
 <213> Spinacia oleracea

<400> 186

Met Ala Ala Thr Thr Thr Thr Met Met Gly Met Ala Thr Thr Phe Val  
 1                                   5                                   10                                   15  
 Pro Lys Pro Gln Ala Pro Pro Met Met Ala Ala Leu Pro Ser Asn Thr  
                                  20                                   25                                   30  
 Gly Arg Ser Leu Phe Gly Leu Lys Thr Gly Ser Arg Gly Gly Arg Met  
                                  35                                   40                                   45  
 Thr Met Ala Ala Tyr Lys Val Thr Leu Val Thr Pro Thr Gly Asn Val  
                                  50                                   55                                   60  
 Glu Phe Gln Cys Pro Asp Asp Val Tyr Ile Leu Asp Ala Ala Glu Glu  
 65                                   70                                   75                                   80  
 Glu Gly Ile Asp Leu Pro Tyr Ser Cys Arg Ala Gly Ser Cys Ser Ser  
                                  85                                   90                                   95

Cys Ala Gly Lys Leu Lys Thr Gly Ser Leu Asn Gln Asp Asp Gln Ser  
100 105 110

Phe Leu Asp Asp Asp Gln Ile Asp Glu Gly Trp Val Leu Thr Cys Ala  
115 120 125

Ala Tyr Pro Val Ser Asp Val Thr Ile Glu Thr His Lys Glu Glu Glu  
130 135 140

Leu Thr Ala  
145

<210> 187  
<211> 147  
<212> PRT  
<213> Spinacia oleracea

<400> 187

Met Ala Ala Thr Thr Thr Thr Met Met Gly Met Ala Thr Thr Phe Val  
1 5 10 15

Pro Lys Pro Gln Ala Pro Pro Met Met Ala Ala Leu Pro Ser Asn Thr  
20 25 30

Gly Arg Ser Leu Phe Gly Leu Lys Thr Gly Ser Arg Gly Gly Arg Met  
35 40 45

Thr Met Ala Ala Tyr Lys Val Thr Leu Val Thr Pro Thr Gly Asn Val  
50 55 60

Glu Phe Gln Cys Pro Asp Asp Val Tyr Ile Leu Asp Ala Ala Glu Glu  
65 70 75 80

Glu Gly Ile Asp Leu Pro Tyr Ser Cys Arg Ala Gly Ser Cys Ser Ser  
85 90 95

Cys Ala Gly Lys Leu Lys Thr Gly Ser Leu Asn Gln Asp Asp Gln Ser  
100 105 110

Phe Leu Asp Asp Asp Gln Ile Asp Glu Gly Trp Val Leu Thr Cys Ala  
115 120 125

Ala Tyr Pro Val Ser Asp Val Thr Ile Glu Thr His Lys Glu Glu Glu  
130 135 140

Leu Thr Ala  
145

<210> 188  
 <211> 364  
 <212> PRT  
 <213> Spinacia oleracea

<400> 188

Met	Ala	Cys	Ser	Leu	Ser	Phe	Ser	Ser	Ser	Val	Ser	Thr	Phe	His	Leu
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Pro	Thr	Thr	Thr	Gln	Ser	Thr	Gln	Ala	Pro	Pro	Asn	Asn	Ala	Thr	Thr
			20					25					30		
Leu	Pro	Thr	Thr	Asn	Pro	Ile	Gln	Cys	Ala	Asn	Leu	Arg	Glu	Leu	Arg
		35					40					45			
Asp	Arg	Ile	Gly	Ser	Val	Lys	Asn	Thr	Gln	Lys	Ile	Thr	Glu	Ala	Met
	50					55					60				
Lys	Leu	Val	Ala	Ala	Ala	Lys	Val	Arg	Arg	Ala	Gln	Glu	Ala	Val	Val
65					70					75					80
Asn	Gly	Arg	Pro	Phe	Ser	Glu	Thr	Leu	Val	Glu	Val	Leu	Tyr	Asn	Met
				85					90					95	
Asn	Glu	Gln	Leu	Gln	Thr	Glu	Asp	Val	Asp	Val	Pro	Leu	Thr	Lys	Ile
			100					105					110		
Arg	Thr	Val	Lys	Lys	Val	Ala	Leu	Met	Val	Val	Thr	Gly	Asp	Arg	Gly
		115					120					125			
Leu	Cys	Gly	Gly	Phe	Asn	Asn	Met	Leu	Leu	Lys	Lys	Ala	Glu	Ser	Arg
	130					135					140				
Ile	Ala	Glu	Leu	Lys	Lys	Leu	Gly	Val	Asp	Tyr	Thr	Ile	Ile	Ser	Ile
145					150					155					160
Gly	Lys	Lys	Gly	Asn	Thr	Tyr	Phe	Ile	Arg	Arg	Pro	Glu	Ile	Pro	Val
				165					170					175	
Asp	Arg	Tyr	Phe	Asp	Gly	Thr	Asn	Leu	Pro	Thr	Ala	Lys	Glu	Ala	Gln
			180					185					190		
Ala	Ile	Ala	Asp	Asp	Val	Phe	Ser	Leu	Phe	Val	Ser	Glu	Glu	Val	Asp
		195					200					205			
Lys	Val	Glu	Met	Leu	Tyr	Thr	Lys	Phe	Val	Ser	Leu	Val	Lys	Ser	Asp
	210					215					220				

Pro Val Ile His Thr Leu Leu Pro Leu Ser Pro Lys Gly Glu Ile Cys  
225 230 235 240

Asp Ile Asn Gly Lys Cys Val Asp Ala Ala Glu Asp Glu Leu Phe Arg  
245 250 255

Leu Thr Thr Lys Glu Gly Lys Leu Thr Val Glu Arg Asp Met Ile Lys  
260 265 270

Thr Glu Thr Pro Ala Phe Ser Pro Ile Leu Glu Phe Glu Gln Asp Pro  
275 280 285

Ala Gln Ile Leu Asp Ala Leu Leu Pro Leu Tyr Leu Asn Ser Gln Ile  
290 295 300

Leu Arg Ala Leu Gln Glu Ser Leu Ala Ser Glu Leu Ala Ala Arg Met  
305 310 315 320

Thr Ala Met Ser Asn Ala Thr Asp Asn Ala Asn Glu Leu Lys Lys Thr  
325 330 335

Leu Ser Ile Asn Tyr Asn Arg Ala Arg Gln Ala Lys Ile Thr Gly Glu  
340 345 350

Ile Leu Glu Ile Val Ala Gly Ala Asn Ala Cys Val  
355 360

<210> 189  
<211> 179  
<212> PRT  
<213> Oryza sativa (japonica cultivar-group)  
<400> 189

Met Ala Met Ala Ser Thr Ala Val Ser Ser Thr Leu Pro Leu Phe His  
1 5 10 15

Val Arg Thr Ala Ser Ser Ala Pro Ala Ala Leu Arg Phe Thr Thr Arg  
20 25 30

Gly Arg Gly Gly Gly Arg His Ser Val Ala Cys Asn Ser Thr Ala Ala  
35 40 45

Ser Ser Pro Lys Val Leu Glu Leu Gly Asp Ala Ile Ala Gly Leu Thr  
50 55 60

Leu Glu Glu Ala Arg Gly Leu Val Asp His Leu Gln Glu Arg Leu Gly  
65 70 75 80

Val Ser Ala Ala Ala Phe Ala Pro Ala Ala Val Val Ala Ala Pro Gly  
Page 336

85

90

95

Ala Ala Gly Gly Gly Glu Asp Gly Ala Pro Ala Glu Lys Thr Glu Phe  
 100 105 110

Asp Val Val Ile Glu Glu Val Pro Ser Ser Ala Arg Ile Ala Thr Ile  
 115 120 125

Lys Val Val Arg Ala Leu Thr Asn Leu Ala Leu Lys Glu Ala Lys Asp  
 130 135 140

Leu Ile Glu Gly Leu Pro Lys Lys Ala Lys Glu Ala Val Ser Lys Glu  
 145 150 155 160

Glu Ala Glu Glu Ala Lys Lys Gln Leu Glu Glu Val Gly Ala Lys Val  
 165 170 175

Ser Ile Ala

<210> 190

<211> 185

<212> PRT

<213> Oryza sativa (japonica cultivar-group)

<400> 190

Met Ala Ser Thr Ala Leu Ser Ser Ala Phe Ser Leu Leu Ser Leu Pro  
 1 5 10 15

Ser Ser Ser Ser Pro Ala Ala Ala Ala Ala Ala Ala Pro Arg Ser Phe  
 20 25 30

Ala Val Pro Ser Arg Ala Arg Pro Arg Arg Ala Val Ala Val Val Ala  
 35 40 45

Ser Thr Ala Thr Glu Ser Pro Lys Val Leu Glu Leu Gly Asp Ala Ile  
 50 55 60

Ala Gly Leu Thr Leu Glu Glu Ala Arg Gly Leu Val Asp His Leu Gln  
 65 70 75 80

Glu Arg Leu Gly Val Ser Ala Ala Ala Phe Ala Pro Ala Ala Val Val  
 85 90 95

Ala Ala Pro Gly Ala Gly Gly Ala Gly Ala Ala Ala Asp Glu Ala Pro  
 100 105 110

Ala Glu Lys Thr Glu Phe Asp Val Val Ile Glu Glu Val Pro Ser Ser  
 115 120 125

Ala Arg Ile Ala Ser Ile Lys Val Val Arg Ala Leu Thr Asn Leu Ala  
130 135 140

Leu Lys Glu Ala Lys Asp Leu Ile Glu Gly Leu Pro Lys Lys Val Lys  
145 150 155 160

Glu Gly Val Ser Lys Asp Glu Ala Glu Asp Ala Lys Lys Gln Leu Glu  
165 170 175

Glu Val Gly Ala Lys Val Ser Ile Ala  
180 185

<210> 191  
<211> 1259  
<212> PRT  
<213> Pisum sativum

<400> 191

Met Pro Met Ala Ala Ser Thr Ser Thr Ser Ser Leu Ser Val Val Gly  
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Thr Asn Leu Ser Leu Pro Pro His Arg His His Arg His Phe His Ser  
20 25 30

Pro Ser Ser Ile Ser Thr Arg Ile Arg Thr Asn Arg Leu Phe Leu Ser  
35 40 45

Ser Ser Leu Ala Phe Ser Ser Pro Arg Asp Ala Arg Val Val His Ala  
50 55 60

Gly Leu Gly Leu Arg Arg Asn Thr Pro Asp Val Trp Lys His Tyr Ser  
65 70 75 80

Ser Val Leu Ser Gln Pro Thr Ala Pro Val Pro Val Arg Gln Ser Cys  
85 90 95

Thr Ser Cys Cys Leu Ala Ser Ala Lys Lys Arg Arg Ser Asn Leu Pro  
100 105 110

Arg Phe Val Pro Gly Ala Phe Phe Asp Ser Ser Ser Phe Gly Leu Ser  
115 120 125

Lys Asp Lys Leu Arg His Ala Ser Val Lys Arg Val Gln Leu Pro His  
130 135 140

Ala Thr Val Gly Pro Asp Glu Pro His Ala Ala Ser Thr Thr Trp Gln  
145 150 155 160

Glu Gly Val Ala Glu Lys Gln Asp Leu Ser Leu Phe Asp Ser Glu Leu  
 165 170 175  
 Glu Arg Leu Glu Gly Phe Leu Gly Ser Glu Leu Pro Ser His Pro Lys  
 180 185 190  
 Leu His Arg Gly Gln Leu Lys Asn Gly Ile Arg Tyr Leu Ile Leu Pro  
 195 200 205  
 Asn Lys Val Pro Pro Thr Arg Phe Glu Ala His Met Glu Val His Val  
 210 215 220  
 Gly Ser Ile Asp Glu Glu Asp Asp Glu Gln Gly Ile Ala His Met Ile  
 225 230 235 240  
 Glu His Val Ala Phe Leu Gly Ser Lys Lys Arg Glu Lys Leu Leu Gly  
 245 250 255  
 Thr Gly Ala Arg Ser Asn Ala Tyr Thr Asp Phe His His Thr Val Phe  
 260 265 270  
 His Ile His Ser Pro Thr Ser Thr Lys Asp Ser Asp Asp Leu Leu Pro  
 275 280 285  
 Ser Val Leu Asp Ala Leu Asn Glu Ile Thr Phe His Pro Asn Phe Leu  
 290 295 300  
 Ala Ser Arg Ile Glu Lys Glu Arg Arg Ala Ile Leu Ser Glu Leu Gln  
 305 310 315 320  
 Met Met Asn Thr Ile Glu Tyr Arg Val Asp Cys Gln Leu Leu Gln His  
 325 330 335  
 Leu His Ser Glu Asn Lys Leu Ser Lys Arg Phe Pro Ile Gly Leu Glu  
 340 345 350  
 Glu Gln Ile Lys Lys Trp Asp Ala Asp Lys Ile Arg Lys Phe His Glu  
 355 360 365  
 Arg Trp Tyr Phe Pro Ala Asn Ala Thr Leu Tyr Ile Val Gly Asp Ile  
 370 375 380  
 Gly Asn Ile Pro Lys Thr Val Asn Gln Ile Glu Ala Val Phe Gly Gln  
 385 390 395 400  
 Thr Gly Val Asp Asn Glu Lys Gly Ser Val Ala Thr Ser Ser Ala Phe  
 405 410 415

Gly Ala Met Ala Ser Phe Leu Val Pro Lys Leu Ser Val Gly Leu Gly  
 420 425 430  
 Gly Asn Ser Ile Glu Arg Pro Thr Asn Thr Thr Asp Gln Ser Lys Val  
 435 440 445  
 Phe Lys Lys Glu Arg His Ala Val Arg Pro Pro Val Lys His Thr Trp  
 450 455 460  
 Ser Leu Pro Gly Ser Ser Ala Asn Leu Lys Pro Pro Gln Ile Phe Gln  
 465 470 475 480  
 His Glu Leu Leu Gln Asn Phe Ser Ile Asn Met Phe Cys Lys Ile Pro  
 485 490 495  
 Val Asn Lys Val Gln Thr Tyr Arg Asp Leu Arg Ile Val Leu Met Lys  
 500 505 510  
 Arg Ile Phe Leu Ser Ala Leu His Phe Arg Ile Asn Thr Arg Tyr Lys  
 515 520 525  
 Ser Ser Asn Pro Pro Phe Thr Ser Val Glu Leu Asp His Ser Asp Ser  
 530 535 540  
 Gly Arg Glu Gly Cys Thr Val Thr Thr Leu Thr Ile Thr Ala Glu Pro  
 545 550 555 560  
 Lys Asn Trp Gln Asn Ala Ile Arg Val Ala Val His Glu Val Arg Arg  
 565 570 575  
 Leu Lys Glu Phe Gly Val Thr Gln Gly Glu Leu Thr Arg Tyr Leu Asp  
 580 585 590  
 Ala Leu Leu Arg Asp Ser Glu His Leu Ala Ala Met Ile Asp Asn Val  
 595 600 605  
 Ser Ser Val Asp Asn Leu Asp Phe Ile Met Glu Ser Asp Ala Leu Gly  
 610 615 620  
 His Lys Val Met Asp Gln Ser Gln Gly His Glu Ser Leu Ile Ala Val  
 625 630 635 640  
 Ala Gly Thr Val Thr Leu Asp Glu Val Asn Ser Val Gly Ala Gln Val  
 645 650 655  
 Leu Glu Phe Ile Ala Asp Phe Gly Lys Leu Ser Ala Pro Leu Pro Ala  
 660 665 670



Ala Ile Val Ala Cys Val Pro Lys Lys Val His Ile Glu Gly Ala Gly  
 675 680 685  
 Glu Thr Glu Phe Lys Ile Ser Ser Thr Glu Ile Thr Asp Ala Met Lys  
 690 695 700  
 Ala Gly Leu Asp Glu Pro Ile Glu Pro Glu Pro Glu Leu Glu Val Pro  
 705 710 715 720  
 Lys Glu Leu Val Gln Ser Ser Thr Leu Gln Glu Leu Lys Asn Gln Arg  
 725 730 735  
 Lys Pro Ala Phe Ile Pro Val Ser Pro Glu Ile Glu Ala Lys Lys Leu  
 740 745 750  
 His Asp Glu Glu Thr Gly Ile Thr Arg Leu Arg Leu Ala Asn Gly Ile  
 755 760 765  
 Pro Val Asn Tyr Lys Ile Ser Lys Ser Glu Thr Gln Ser Gly Val Met  
 770 775 780  
 Arg Leu Ile Val Gly Gly Gly Arg Ala Ala Glu Gly Ser Asp Ser Arg  
 785 790 795 800  
 Gly Ser Val Ile Val Gly Val Arg Thr Leu Ser Glu Gly Gly Arg Val  
 805 810 815  
 Gly Asn Phe Ser Arg Glu Gln Val Glu Leu Phe Cys Val Asn Asn Gln  
 820 825 830  
 Ile Asn Cys Ser Leu Glu Ser Thr Glu Glu Phe Ile Ser Leu Glu Phe  
 835 840 845  
 Arg Phe Thr Leu Arg Asn Asn Gly Met Arg Ala Ala Phe Gln Leu Leu  
 850 855 860  
 His Met Val Leu Glu His Ser Val Trp Ser Asp Asp Ala Leu Asp Arg  
 865 870 875 880  
 Ala Arg Gln Val Tyr Leu Ser Tyr Tyr Arg Ser Ile Pro Lys Ser Leu  
 885 890 895  
 Glu Arg Ser Thr Ala His Lys Leu Met Val Ala Met Leu Asp Gly Asp  
 900 905 910  
 Glu Arg Phe Thr Glu Pro Thr Pro Ser Ser Leu Glu Asn Leu Thr Leu  
 915 920 925

Gln Ser Val Lys Asp Ala Val Met Asn Gln Phe Val Gly Asn Asn Met  
 930 935 940

Glu Val Ser Ile Val Gly Asp Phe Thr Glu Glu Glu Ile Glu Ser Cys  
 945 950 955 960

Ile Leu Asp Tyr Leu Gly Thr Ala Gln Ala Thr Gly Asn Phe Lys Asn  
 965 970 975

Gln Gln Gln Ile Ile Pro Pro Thr Phe Arg Leu Ser Pro Ser Ser Leu  
 980 985 990

Gln Ser Gln Glu Val Phe Leu Asn Asp Thr Asp Glu Arg Ala Cys Ala  
 995 1000 1005

Tyr Ile Ala Gly Pro Ala Pro Asn Arg Trp Gly Phe Thr Ala Asp  
 1010 1015 1020

Gly Asn Asp Leu Leu Glu Thr Ile Asp Asn Ala Ser Ser Val Asn  
 1025 1030 1035

Asn Asn Gly Thr Lys Ser Asp Ala Leu Gln Thr Glu Gly Ala Pro  
 1040 1045 1050

Arg Arg Ser Leu Arg Ser His Pro Leu Phe Phe Gly Ile Thr Met  
 1055 1060 1065

Gly Leu Leu Ser Glu Ile Ile Asn Ser Arg Leu Phe Thr Thr Val  
 1070 1075 1080

Arg Asp Ser Leu Gly Leu Thr Tyr Asp Val Ser Phe Glu Leu Asn  
 1085 1090 1095

Leu Phe Asp Arg Leu Lys Leu Gly Trp Tyr Val Val Ser Val Thr  
 1100 1105 1110

Ser Thr Pro Ser Lys Val His Lys Ala Val Asp Ala Cys Lys Asn  
 1115 1120 1125

Val Leu Arg Gly Leu His Ser Asn Gly Ile Thr Val Arg Glu Leu  
 1130 1135 1140

Asp Arg Ala Lys Arg Thr Leu Leu Met Arg His Glu Ala Glu Ile  
 1145 1150 1155

Lys Ser Asn Ala Tyr Trp Leu Gly Leu Leu Ala His Leu Gln Ser  
 1160 1165 1170

Ser Ser Val Pro Arg Lys Asp Leu Ser Cys Ile Lys Asp Leu Thr  
 1175 1180 1185

Ser Leu Tyr Glu Ala Ala Thr Ile Glu Asp Thr Cys Leu Ala Tyr  
 1190 1195 1200

Glu Gln Leu Lys Val Asp Glu Asp Ser Leu Tyr Ser Cys Ile Gly  
 1205 1210 1215

Val Ser Gly Ala Gln Ala Ala Gln Asp Ile Ala Ala Pro Val Glu  
 1220 1225 1230

Glu Glu Glu Ala Gly Glu Gly Tyr Pro Gly Val Leu Pro Met Gly  
 1235 1240 1245

Arg Gly Leu Ser Thr Met Thr Arg Pro Thr Thr  
 1250 1255

<210> 192  
 <211> 332  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 192

Met Ala Ala Ser Leu Gln Ser Thr Ala Thr Phe Leu Gln Ser Ala Lys  
 1 5 10 15

Ile Ala Thr Ala Pro Ser Arg Gly Ser Ser His Leu Arg Ser Thr Gln  
 20 25 30

Ala Val Gly Lys Ser Phe Gly Leu Glu Thr Ser Ser Ala Arg Leu Thr  
 35 40 45

Cys Ser Phe Gln Ser Asp Phe Lys Asp Phe Thr Gly Lys Cys Ser Asp  
 50 55 60

Ala Val Lys Ile Ala Gly Phe Ala Leu Ala Thr Ser Ala Leu Val Val  
 65 70 75 80

Ser Gly Ala Ser Ala Glu Gly Ala Pro Lys Arg Leu Thr Tyr Asp Glu  
 85 90 95

Ile Gln Ser Lys Thr Tyr Met Glu Val Lys Gly Thr Gly Thr Ala Asn  
 100 105 110

His Ser Pro Thr Ile Asp Gly Gly Ser Glu Thr Phe Ser Phe Lys Pro  
 115 120 125

Gly Lys Tyr Ala Gly Lys Lys Phe Cys Phe Glu Pro Thr Ser Phe Thr  
130 135 140

Val Lys Ala Asp Ser Val Ser Lys Asn Ala Pro Pro Glu Phe Gln Asn  
145 150 155 160

Thr Lys Leu Met Thr Arg Leu Thr Tyr Thr Leu Asp Glu Ile Glu Gly  
165 170 175

Pro Phe Glu Val Ala Ser Asp Gly Ser Val Asn Phe Lys Glu Glu Asp  
180 185 190

Gly Ile Asp Tyr Ala Ala Val Thr Val Gln Leu Pro Gly Gly Glu Arg  
195 200 205

Val Pro Phe Leu Phe Thr Val Lys Gln Leu Asp Ala Ser Gly Lys Pro  
210 215 220

Asp Ser Phe Thr Gly Lys Phe Leu Val Pro Ser Tyr Arg Gly Ser Ser  
225 230 235 240

Phe Leu Asp Pro Lys Gly Arg Gly Gly Ser Thr Gly Tyr Asp Asn Ala  
245 250 255

Val Ala Leu Pro Ala Gly Gly Arg Gly Asp Glu Glu Glu Leu Val Lys  
260 265 270

Glu Asn Val Lys Asn Thr Ala Ala Ser Val Gly Glu Ile Thr Leu Lys  
275 280 285

Val Thr Lys Ser Lys Pro Glu Thr Gly Glu Val Ile Gly Val Phe Glu  
290 295 300

Ser Leu Gln Pro Ser Asp Thr Asp Leu Gly Ala Lys Val Pro Lys Asp  
305 310 315 320

Val Lys Ile Gln Gly Val Trp Tyr Gly Gln Leu Glu  
325 330

<210> 193  
<211> 255  
<212> DNA  
<213> Oryza sativa

<400> 193  
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gtggtgcgca agccggcgca cctgttcctc gacgagctcg gcgtcgcgta cgacgagcag 120  
gaggactacg tcgtcatcaa gcacgccgcn ctcttcacct ccaccgtcat gagccgcctc 180

ctggcgcgcc ccaacgtgaa gctgttcaac gccgtcgccg tcgaggacct catcgtcaag	240
gagggccgcg tcggc	255

<210> 194  
 <211> 606  
 <212> DNA  
 <213> oryza sativa (japonica cultivar-group)

<220>  
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 <222> (349)..(349)  
 <223> n is a, c, g, or t

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gtctccgtcg cgccgcgcac cggcgggcgcc atctgcaact ccatctcgtc gtcgtcgctcc	180
actccccctt acgacctcaa cgccatcagg ttcagcccca tcaaggagtc catcgtgtcc	240
cgcgagatga cccggcggtg catgaccgac atgatcacct acgccgacac cgacgtcgtc	300
gtcgtcggcg ccggctccgc ggggctctcc tgcgcgtacg agctctccna ggaccctcc	360
gtcagcgctc cgtcatcga gcagtcgggtg tccccggcg gcggcgcggtg gtcggcggg	420
cagctgttct ccgccatggt ggtgcgcaag ccggcgccacc tgttcctcga cgagctcggc	480
gtcgcgtacg acgagcagga ggactacgtc gtcattcaagc acgccgcgct cttcacctcc	540
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aggacc	606

<210> 195  
 <211> 4465  
 <212> DNA  
 <213> Homo sapiens

<400> 195	
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gaggatttgg ggtggaaggc aggcattggtc aaaccattt cactgacagg agagcagaga	180
caggacgtgt ctctctccac gtcttcacgc cagtaaaaga agccaagctg gagcccaaag	240
ccaggtgttc tgactcccag cgtgggggtc cctgcaccaa ccatgagccg cctgctctgg	300
aggaaggtgg ccggcgccac cgtcggggca gggccgggtc cagctccggg gcgctgggtc	360
tccagctccg tccccgcgtc cgacccacgc gacgggcagc ggcgggcgga gcagcagcag	420
cagcagcagc agcagcagca acagcagcct cagcagccgc aagtgctatc ctcggagggc	480
gggcagctgc ggcacaacc attggacatc cagatgctct cgagaggggt gcacgagcaa	540

atcttcgggc	aaggagggga	gatgcctggc	gaggccgcgg	tgcgccgcag	cgtcgagcac	600
ctgcagaagc	acgggctctg	ggggcagcca	gccgtgccct	tgcccgcagt	ggagctgcgc	660
ctgccgcccc	tctacgggga	caacctggac	cagcacttcc	gcctcctggc	ccagaagcag	720
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gtggggcaca	atgtttcctt	tgaccgagct	catatcagg	agcagtacct	gatccagggt	1140
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ttccagcgca	gtctgtggat	agcagccaag	caggggcaaac	acaagggtcca	gccccccaca	1260
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cctggacacc	ctggatggta	ccggaagctc	tgcccccgcc	tagacgaccc	tgcattggacc	2040
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aagctgggtc	tgaatgactt	gccccagtca	gtcgcccttt	tcagtgcagt	cgatattgac	3840
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gccccaaagt	tcacattaac	tcaggcattt	catttatatt	ttccttttct	tcttggtggtg	4320
ttctttgttc	tgtcccccac	gctctgatgc	agtgccctag	aaggggaaag	aattaatgct	4380

ctaacgtgat aaacctgctc caaggcagtg gaaataaaaa gaaggaaaaa aaagaaaaaa 4440  
 aaaaaaaaaa aaaaaaaaaa aaaat 4465

<210> 196  
 <211> 21  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Target sequence 1

<400> 196  
 aaggtggccg gcgccaccgt c 21

<210> 197  
 <211> 21  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Sense Strand siRNA 1

<400> 197  
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<210> 198  
 <211> 21  
 <212> DNA  
 <213> artificial sequence

<220>  
 <223> Antisense Strand siRNA 1

<400> 198  
 gacgguggcg ccggccacct t 21

<210> 199  
 <211> 21  
 <212> DNA  
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<220>  
 <223> Target Sequence 2

<400> 199  
 aacagcagcc tcagcagccg c 21

<210> 200  
 <211> 21  
 <212> DNA  
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<220>  
 <223> Sense Strand siRNA 2

<400> 200  
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<210> 201  
<211> 21  
<212> DNA  
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<220>  
<223> Antisense strant siRNA 2

<400> 201  
gcggcugcug aggcugcugt t 21

<210> 202  
<211> 21  
<212> DNA  
<213> artificial sequence

<220>  
<223> Target Sequence 3

<400> 202  
aagtgtatc ctcggagggc g 21

<210> 203  
<211> 21  
<212> DNA  
<213> artificial sequence

<220>  
<223> Sense Strand siRNA 3

<400> 203  
gugcuauccu cggagggcgt t 21

<210> 204  
<211> 21  
<212> DNA  
<213> artificial sequence

<220>  
<223> Antisense strand siRNA 3

<400> 204  
cgcccuccga ggauagcact t 21

<210> 205  
<211> 21  
<212> DNA  
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<220>  
<223> Target Sequence 4

<400> 205  
aaccattgg acatccagat g 21

<210> 206  
<211> 21  
<212> DNA

<213> artificial sequence  
 <220>  
 <223> Sense Strand siRNA 4  
 <400> 206  
 cccauggac auccagaugt t 21  
  
 <210> 207  
 <211> 21  
 <212> DNA  
 <213> artificial sequence  
 <220>  
 <223> Antisense Strand siRNA 4  
 <400> 207  
 caucuggaug uccaugggt t 21  
  
 <210> 208  
 <211> 21  
 <212> DNA  
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 <223> Target Sequence 5  
 <400> 208  
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